

# UNITIZING:

## *The unsung hero of materials handling*

By Lorie King Rogers, Associate Editor

**Y**ou've heard it before: In this challenging economy it's more important than ever to do more with less and scrutinize every aspect of your operation for efficiency and savings. An end-of-the-line function, like unitizing, is just the beginning when it comes to creating the perfect load for handling, shipping and storing product—but it's also an excellent place to look for multiple benefits.

"Unitizing deserves more attention than what it often receives," says Tony Barr, vice president of Beumer Corp. (732-560-8222, [www.beumer.com](http://www.beumer.com)). "The right method can significantly reduce the rate of return products caused by shipping damages, reduce the labor cost associated with material handling and reduce the overall cost of packaging while increasing output," Barr adds.

According to Jason Bennett, director of sales and marketing for vonGal (334-261-2700, [www.vongal.com](http://www.vongal.com)), unitizing is the unsung hero of materials handling. "Unitizing is an underutilized way to squeeze savings out of the materials handling process," says Bennett. "It helps answer the call for lowering operating costs while focusing on the

bigger picture of decreasing our carbon footprint and lowering our impact on the environment."

### What is unitizing?

So, what is unitizing? Unitizing is the process of aggregating several items into a single unit load. It's basically building loads without pallets, explains Dan Johnson, technical sales manager for Brenton, a division of Pro Mach (800-535-2730, [www.brentonengineering.com](http://www.brentonengineering.com)). "There are a number of different schemes of binding the load together without a pallet, and there's a real savings in it, especially for manufacturers that are shipping high volumes of product," says Johnson. "Not only can they save the cost of the pallet, but they can maximize the cube of a truck or container and ship [and store] more product in the same amount of space."

But before a load can be shipped, it has to go through one of the schemes that Johnson mentions above. "In the scheme of things, the packaging line is only as efficient as its weakest link," says Fred Beer, president of Westfalia Deam Systems (800-673-2522, [www.westfaliausa.com](http://www.westfaliausa.com)).

"The first thing to understand about

unitizing is that it's a process," says Paul Stewart, director of marketing for Lantech (800-866-0322, [www.lantech.com](http://www.lantech.com)).

He explains that organizations can do it well or do it poorly, but most struggle to establish a set of standards around unitizing like those that exist around the manufacturing process, for example. "You need an efficient process to track performance, and most companies have huge room for improvement in this area," says Stewart.

So how can a company make sure it's strong right up to the point of unitizing and shipping product out the door? Beer says that you have to know your product and have a good overview of product movement in order to choose the best option. Here's a look at a few of the most common unitizing methods.

### Slip sheets

Unitizing means building a load on a flat surface with a minimal base—or starting from the bottom and working up. A slip sheet can provide an appropriate, economical foundation for this process. A typical corrugated paper slip sheet costs less than one dollar and can be recycled or disposed of with mini-



mal cost and associated labor. Another beneficial calculation is size; it matters when you consider that the average 48-inch x 48-inch pallet is about 5.5 inches tall. In that same 5.5 inches, however, it's possible to stack about 25 slip sheets. When you do the math, the savings of storage space and cost add up quickly.

### Stretchwrap

With a base in place, it's time to wrap. Stretchwrap or stretch film is the most common way to bind a load. Part of the reason for this is that stretchwrapping machines are available at many different prices and levels of automation, from simple semi-automatic turn-table models, to rotary-arm or satellite models with automatic programming. But the basics are the same—turn the product while stretching and applying the film: When the load is wrapped, the film returns to its normal size and that creates the tension to hold the load together.

Some of the newer machines are capable of unitizing two full loads in just one minute. There are also a number of suppliers that offer equipment that can unitize, stretchwrap and apply labels. According to Beer, end users are always looking for ways to speed the process and work within a small footprint—combining capabili-

ties addresses these demands.

Priscille Tremblay, sales manager for Wulftec (877-985-3832, [www.wulftec.com](http://www.wulftec.com)), explains that not only are today's machines running more efficiently and using less energy, today's stretchwrap film technology has improved dramatically. For example, a roll of stretchwrap 5,000 feet long once delivered about a 100% stretch, yielding between 10,000 and 12,000 feet. Today, Tremblay explains, you can buy the same amount of film, but because it's so much better, it will stretch to about 17,500 feet. Your stretchwrap and your money go a lot further.

### Shrinkwrap

The opposite of stretching is shrinking. With shrinkwrap technology, an oversized bag is placed over the load then heated to shrink around the load, forming the appropriate compression to hold items together as a single unit. Heat can be applied in a number of ways, including manually with a heat gun or by sending the load on a conveyor through a heat tunnel.

Bar points out that there are a number of advantages to applying a one-layer bag over the load, including five-sided coverage, protection from the elements during shipping or outdoor storage and tamper proofing. Clear shrinkwrap also



**Cornerboard (and angleboard) helps secure the load and protects the product's edges from damage caused by accidental impact.**

lends itself to easy bar code scanning and label placement inside the film, but the shrinkwrap materials and machinery can be a more costly option.

### Stretch hood

As with shrinkwrapping, stretch hooding also involves placing a bag over the load. The major difference is that in this application, the hood is stretched to fit over the load then returns to its original size once in place. No heat is needed to bring the hood to the appropriate containment force. The cost is just about on par with stretchwrapping, while offering similar single-layering advantages of shrinkwrapping.

### Strapping

The main goals of unitizing are creating a stable load, eliminating extra bulk so you can ship and store more product in the same space and decreasing your company's impact on the environment. Strapping helps achieve these goals while also being an effective option when containment and compression are necessary. For example, a printer produces thousands of newspaper circulars and puts them on a skid. Prior to strapping, the stack reaches 6 feet; post strapping it's down to 4.5 feet, a significant difference that means that more product can be shipped.

Another important component of strapping is the ability to use cheaper plastics—and less of it. "One of the most significant advances in recent

## May the containment force be with you

Containment force is what keeps a load together. Too much force might mean damage; too little might mean failure.

There are a number of equations that can help calculate if the right force is being applied. For example, light loads like paper towels and empty containers require about 2 pounds to 4 pounds of force; stable loads like cartons and boxes require about 5 pounds to 7 pounds of force; and unstable loads that are tall or have low column strength could require anywhere from 8 pounds to 18 pounds of containment force.

If you're unitizing a mixed load with odd shapes or sharp protru-

sions, a lower wrap force with more revolutions around the product might be the answer. To be safe and sure on the exact amount of containment force a load may need, consult a professional. It never hurts to get a second opinion, but it does hurt to ship a second load.

"End users need to understand that there are a lot of different ways to get the lowest cost per load and ensure they're getting the right type of protection. But if you have questions, consult with a local expert," advises Chuck Meyer, IPG stretch film product manager. But cheaper isn't always better, and if a wrapper fails, it causes a costly chain reaction.

years is the ability for machines to use lower cost plastics,” says Randy Wright, vice president of sales for EAM Mosca, (800-456-3420, [www.eamosca.com](http://www.eamosca.com)). “Today’s equipment can run thinner, narrower strapping; and as a result, there’s less material so it’s easier to recycle, which can mean zero impact on landfills.”

### Adhesive

Also having a zero impact on landfills is the use of adhesives as a unitizing strategy. Applying spray adhesive to the load’s base and between its layers can keep it all together on relatively short journeys. The cost involved is about even with stretch film, but without the disposal issues. There are, however, potential issues of discoloration on product packaging. Adhesives might work well on secondary packaging, but if it is to be applied to a product’s primary packaging, test first.

### Cornerboard

Product protection is always key. Cornerboard and angleboard create edges that translate to protection, stability and strength. While protecting corners from dents and damage, cornerboard holds the stacking weight of the load. This means you can stack unitized loads on top of each other without damage from compression. Remember, going vertical means storing more product in a smaller footprint.

### It’s wise to unitize

No matter which solution works best for your application, there’s also an important rule of thumb to keep in mind at all times: Let the machine do the work. “The less labor you dedicate to the process, the better off you are because the cost of machine is less than cost of labor,” says Mike Dalough, Lantech’s marketing manager.

Another reason it’s wise to unitize is the related costs associated with poorly unitized loads. If a load isn’t properly unitized, it can suffer from a number of hazards like accidental impact, con-

tamination, temperature and moisture extremes as well as vibration that can loosen the load. Unitizing helps the product arrive at its destination in tact.

### Prevent load failure

Not only do sound unitizing practices help an operation successfully launch its product forward in the handling process, they can keep an operation from falling behind by preventing load failures. The cost of load failures ripples through the entire supply chain and hurts every link in one way or another.

Whether it’s the manufacturer or distributor taking back a rejected delivery, the retailer expecting to put product on the shelf, or the disappointed consumer, everybody pays the price of load failure.

A simple step in preventing load failure is to conduct a visual inspection. First, look to see if the load is wrapped evenly at the top, middle and bottom. Then confirm that the load is firmly secured to its base. Finally, make sure that there isn’t any wrapping material trailing off the load.

A quick check goes a long way, especially since retailers are getting more particular about the condition of the goods they receive. They don’t want to expend time and money unloading a truck with damaged goods; and if the product is damaged, they can’t sell it.

“Our goal is to get the customers’ product from the end of their packaging line to the final consumer in appealing and salable condition,” says Pat Fitzgerald, new market development manager for ITW Angleboard (800-252-4777, [www.itwangleboard.com](http://www.itwangleboard.com)). “The longer the ride and the more frequent the exchanges, the higher the risk for product damage. So, the more handling your product will incur before it gets to its final consumer, the more you need protection,” he adds.

Dalough agrees: “Club stores are getting more particular about what they will accept. If they open a trailer at the receiving dock and stuff has fallen, they’ll shut the door and send it back.”

“If a shipment is rejected and needs to be replaced, that means product cost,



**Economic and eco-friendly, strapping unitizes a load with a minimal amount of materials. Once these cans are delivered to a beverage manufacturer, the straps are removed, put into a chopper and sold to a recycler.**

handling cost and effort have to be duplicated,” says Paul Stewart, Lantech director of marketing.

But even if product isn’t replaced, there are disposal costs. Tossing something in the dumpster costs money because you have to pay for trash pick up. Additionally, you’re adding to the landfill, and that flies in the face of one of today’s most important corporate initiatives—going green.

“There’s a big push to reduce the carbon footprint,” explains Mike Young, vice president of films for Intertape Polymer Group (IPG, 800-474-8273, [www.intertapepolymer.com](http://www.intertapepolymer.com)). “It’s not only focused on energy consumed to unitize a load, but on the materials used in the process.”

Young says, materials have gotten increasingly better over the last couple years. For example, stronger, thinner gauge film has the ability to hold a load together; and thinner means less material to recycle or discard. Additionally, virtually all wrapping material is recyclable, but if the material does ultimately land in the landfill, the newest materials are biodegradable. □