
Palletizing Software Saves Space for Power Tool Maker

Written by: Clyde E. Witt

More products on a pallet, more pallets in a container, means lower logistics costs for Techtronics Industries, Inc.

Dictating a product's arrangement within a package, and specifying orientation of the package and unit load design, can save dollars in material costs and freight costs. "[Packaging engineers] try to start in the earliest stages of product design," says Sean Connolly, senior packaging engineer, Techtronics Industries, Inc. (TTI) North America, (Anderson, S.C.), a subsidiary of Hong Kong-based Techtronic Industries Co. Ltd. "We choose the orientation of the product within the package, which leads to the arrangement of units on a pallet or in a sea container."

TTI manufactures and distributes a host of power tools and lawn and garden products under name brands such as Ryobi, Milwaukee, Homelite and others. Most of its products arrive from overseas, and the product mix constantly changes. Finding a way to increase the number of units per sea container, which can range in cost from \$4,000 to \$5,000 per container, is an ongoing challenge. To assist in pallet and container loading, Connolly uses software developed by CAPE Systems, Inc. (Allen, Texas).

"On some of our larger units, like pressure washers, for example," says Connolly, "we might have as much as \$23 in freight charges per unit if we can only fit 200 in a container. If we can increase that number only 10%, over a year's time it represents a real savings on freight."

Increasing the number of units per container happens through new configurations of established carton sizes, or redesigning the carton itself. With many package designs, the product is well protected and looks good, satisfying the goals of both manufacturing and marketing. The dimensions of the carton, however, are not always suited to best use the space of a sea container or fit onto a conventional pallet.

Connolly notes that it's not always the smallest package design that is most financially efficient. As a product moves through the distribution channel, its geometry, the way it is grouped, the dimensions of the sea container, etc., can impact the cost effectiveness of any transport package design.

What software does

Determining the dimensional permutations and options of package and container designs is a job for the computer. Saving an inch here or there can mean adding another row of products in the container. "We also use the software to determine pallet patterns for our major customers who have strict standards," says Connolly. "Someone like Home Depot, for example, won't allow any overhang or severe under hang on its loads."

And while a human could eventually find the best way to arrange items on the pallet, the computer can do the task in a matter of seconds.

Flexibility and compromise are key concepts of palletizing and unit load design. Packaging engineers have to work with industrial engineers and corporate marketing staffs to create the ideal package. Connolly says, with products such as the lawn and garden implements, there are things like pivoting handles, wheels and accessories that can be left for the customer to assemble. That approach also makes shipping easier.

"As fuel and freight costs continue to rise," says Connolly, "using the packaging software earlier in the front end of development stage of the product, is becoming more valuable."

With each configuration of the carton the computer offers, Connolly runs the numbers to evaluate the options. Based on dimensions of prototype products, he calculates container patterns for the approximate package size. "From this initial pattern," he says, "we get an approximate quantity. Then we look for opportunities to improve."

Looking for the "magic numbers" is what he calls it. If the proposed arrangement is close to getting, say a sixth row of product into a sea container, engineers look at how much they need to trim from the cartons to add that extra row. It might be just a matter of manipulating the cartons, or moving items within the box, that produces the loading pattern they need. A modification to the body of the product is more severe, but doable, if packaging engineers are in at the product's design stage. "Getting in early," he says, "provides more opportunity."

Secondary packaging, just like primary packaging, is planned with software. If the master pack (units of two, four, six or eight per level in the case of large lawn and garden implements) quantity is flexible, just changing the number is the easiest way to get results. When numbers are set, however, configuring them to a standard pallet size becomes a job for the computer. The solution might be to use a custom-sized pallet.

"We have all the carton dimensions of all our products loaded into the program," says Connolly. "As we get an order, we load in the quantity of which items are requested and the software explores the effect of different arrangements."

When the optimal pattern is determined, units are hand stacked on the pallets. Distribution center employees get a map, or template of how the load should be stacked.

Connolly says one of the pleasures of working with the software is that the program takes into consideration things humans might miss. For example, when determining how many cartons fit into a sea container, knowing the cube space is just the beginning. All of the information about the sea container, including its manufacturer, is loaded into the software. Containers from different manufacturers can vary in construction if not cube capacity. Consideration has to be given to built-in obstructions within the container that might not be a problem when the container is hand-loaded at one end of the supply chain. When the container is unloaded with lift trucks at the other end of the journey, however, maneuverability becomes an issue. The palletizing software takes the clearance needed for truck tines or clamps into consideration.

"The software," says Connolly, "allows us to manipulate dimensions of primary, secondary and tertiary packaging for maximizing efficiency. Choosing the best orientation, quantity or arrangement of packages gives us a quick way to create the right package."

To find out more about CAPE Systems, please contact:

USA

100 Allentown Parkway Suite 218 Allen Texas 75002
Tel: 800 229 3434 Tel: 1 972 359 1100 Email: sales@capeystems.com

USA

3619 Kennedy Road South Plainfield New Jersey 07080
Tel: 908 756 2000 Email: sales@capeystems.com

UK

Suite G.03 The Perfume Factory 140 Wales Farm Road London W3 6UG
Tel: +44 (0) 20 8752 8610 Email: sales@capeystemseuro.com

