

Optimizing transport packaging

Making the most of the available space within trucks

Moving products with a minimum of waste and at the least possible cost to the environment and the company – that is what optimizing transport packaging is all about. The choice of transport packaging material as well as how the products are loaded into the truck all play important roles. According to the Packaging Centre of the XIOS Institute in Limburg, Belgium, there is still plenty of room for improvement.

'Typical problem areas are the ever heavier pallet loads, as well as products that either extend past the edge of the pallet or that leave too much margin between the products and the edges of a pallet,' observes Philip De Schepper, Technical Manager at the Packaging Centre. 'We also encounter a lot of over-packaging. Understandably, companies often prefer to use excess packaging rather than risk product loss. That being said, this is clearly better than not enough packaging. In many cases, however, it is easy to achieve savings without increasing the risk of damage.'

prevent pack

Ensure piling strength

The quest for optimal transport packaging depends on each individual company and is strongly linked to the processes within a specific company. In addition, primary, secondary, and tertiary packaging strongly influence each other. For instance, the size of cardboard packaging is best chosen as a function of its possibilities for palletization. This is the only approach that leads to the optimal filling of both the pallet and the truck.

'It is also essential to avoid products sticking out past the edge of a pallet or with excessive inner margins between the load and the edges of the pallet,' adds De Schepper. 'When this occurs, there is a considerable impact on both the piling strength and stability. When cardboard boxes containing products extend past the edges of a pallet, they lose a large part of their support,

substantially increasing the risk of toppling and product damage.' For some loads, it is therefore best to pile the boxes like bricks in a wall. That is the best way to ensure sufficient strength and stability.

Overloading a pallet is not ideal either. 'We encourage companies to load pallets in an optimal configuration; this is not the same as loading them to the maximum,' points out De Schepper. 'We strongly advise, for example, that there should not be any empty spaces between products and that there should be as little room as possible between the load and the edges of a pallet. Experience has taught us that minimum room is ideal so as to avoid having products sticking out of a pallet and prevent load movement.'

Software helps improve palletizing

A growing number of companies use palletization software to calculate how a pallet and a truck can be optimally loaded. This employs a large number of criteria—the product, the packaging, the length and type of transport, et cetera. The software indicates which factors influence the palletization scheme and how these factors can be optimized one by one.

'Many companies already use such software tools yet still experience

problems. This often has to do with the fact that not all parameters are known or taken into account. Factors such as temperature, humidity, and transport distance are often overlooked,' points out Gudrun Nowicki, Project Engineer at the Packaging Centre. 'We can help companies make better use of their software, highlight where the issues are, or make the calculations for them.'

good to remember

Various product and transport related parameters must be taken into account in order to optimize transport packaging.

Palletization software can help companies in this respect.

Optimal transport packaging and palletization begins at the design phase of the product as well as its packaging.

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Testing the quality of pallets

It is relatively easy to test the quality of a pallet load. 'Companies can call upon our Packaging Centre for such tests,' adds Nowicki. 'Vibration tests, for instance, are essential to verify whether the goods and/or the packaging do not break, or to make sure that the products won't move or fall while inside the vehicle, which complicates unloading. We use a large vibration table to check this. We also simulate changes in temperature and humidity in order to measure their influence. All of these tests can be carried out on a broad array of secondary and tertiary packaging.'



Palletization software employs numerous criteria to calculate and optimize the stacking pattern, height, and location of boxes.

Include transport packaging in the design stage

'Few companies consider factors involved in transport packaging during the development stage of their product and its packaging,' explains Nowicki. 'However, doing so can avoid a great deal of over-packaging, given the fact that the various levels of

packaging strongly influence each other. The specifications and materials of the secondary and tertiary packaging are important points of focus, as is their role throughout the logistical process – including handling and storage.'

Points to pay attention to:

- Plan extra strengthening under the lower pallets when stacking loaded pallets.
- Ensure that the cling film used to stabilize the load on a pallet is sufficiently strong. Cling films lose a great deal of their tension and holding power at high temperatures. Avoid letting cling film wrapped pallets stand in the sun too long.
- Consider the time and the distance over which the products must be transported. Transport packaging for European-wide shipping must be twice as strong on average as packaging for internal transport within Belgium. Transport packaging that is sent overseas must be up to seven times stronger.

For additional information

The XIOS Packaging Centre in Limburg, Belgium, carries out research on many types of packaging. In addition, this research institution also helps companies solve packaging problems and develop new packaging solutions.

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