



Palletizing Optimization and Automation

Introduction

Palletizing is closely related to transport logistics; the denser the goods are packed, the fewer vehicles will be required to deliver them. Thus, transport costs will be lower. Moreover, automated scheduling of packaging can help reduce the workload of warehouse workers.

In this case study, we'll tell you about Veeroute Packer, our new palletizing optimization service. Read on and learn what results it has delivered to our client, a leading supplier of construction materials, in the first month of operation.

Client profile

	Established	Geography	Range of goods
A large supplier of packaged fasteners.	1993	438 cities across Europe and Asia are serviced	30000+ products in the catalog

The company, which holds its own DIY brand and online store, has won numerous industry awards. Its catalog includes tens of thousands of products, which are represented in many global DIY chains.

Since 2004, the company has been cooperating with one of the DIY market leaders and is one of its biggest suppliers.

Challenge

Close cooperation with one of the DIY retailers became the catalyst for the launch of a joint project between the company and Veeroute.

In 2019, the DIY retailer opened an innovative Distribution Center, which constitutes a modern mechanized complex with an area of 1,507,000 square feet, equipped with a warehouse automation system. At the moment, the Distribution Center is designed to serve 1,500 suppliers. Its resources maintain the processing of more than 7 million pallets per year.

With the Distribution Center's Single Order system, suppliers no longer have to ship goods to each store on their own.

How does Single Order work?

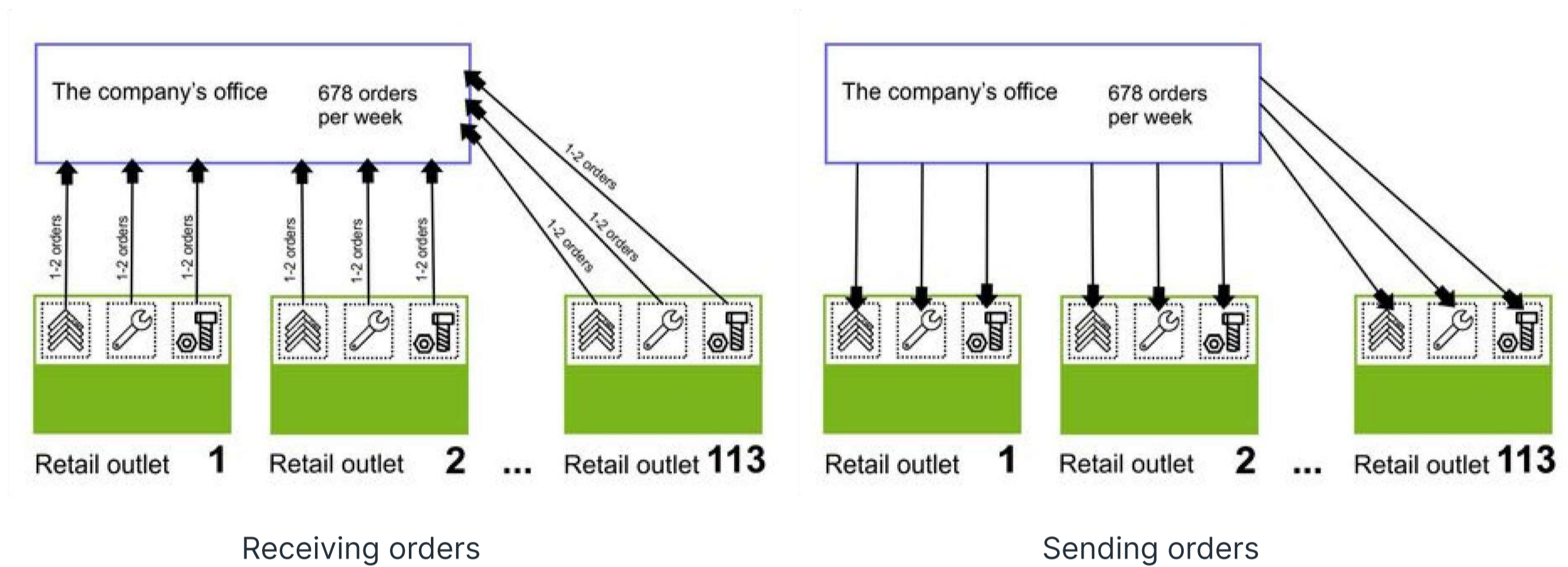
The Single Order system consists of three parts:

1. Instead of receiving hundreds of orders per week, the supplier takes only one order from the order consolidation center. Then, based on the received order, one application is formed. It is collected and sent to the Distribution Center.
2. The Distribution Center automatically sorts all goods and distributes them to 113 outlets. A separate pallet is formed for each store. Goods from different suppliers can be placed on one pallet.
3. From the Distribution Center, the stacked orders (pallets) are shipped to retail outlets.

The Single Order system made it possible to substantially improve the retailer's logistics.

The system allows deliveries to be carried out faster, and suppliers can save on transportation costs.

Before the Single Order system was implemented, the company's logistics model looked like this:



- Every week, the company received 1-2 orders from 3 departments in each of the 113 stores.
- Office and warehouse employees processed up to 678 orders weekly.
- The company collected, shipped, and delivered all 678 orders separately.

The Single Order system made the supply chain simpler and more efficient:

Receiving orders

- The company forms, collects, and ships one united order to the Distribution Center for all stores.
- Sorting and last-mile delivery is handled by the DIY retailer, through the Distribution Center.

Sending orders

Palletizing problem

After the Single Order system was introduced, despite its objective convenience, additional palletizing and packaging complications arose.

There were some reasons for it:

- The DIY retailer has its own order packaging requirements, and all suppliers using the Single Order system must comply with them.
- Single Order always means large deliveries. The order that the company sends weekly, due to the size of the assortment and the large number of outlets, may include tens of thousands of packages.
- One of the company's competitive advantages is different types of product packaging, from small to industrial. Therefore, about 60 different types of boxes are used when packing orders.

Considering the number of items in the order and the variety of box types, it became extremely difficult to stack the goods densely on pallets.

Warehouse employees, even highly skilled and efficient ones, are not physically able to operate with the amount of information needed to select the optimal location of 50,000 boxes on pallets. If the goods are not palletized densely enough, then more trucks will be needed to transport them. This entails an increase in transport costs. Moreover, the DIY retailer's special packaging requirements must be taken into account.

In order to optimize the packaging of goods, the company's management decided to look for a technology partner.

Search for an optimization partner

Before choosing Veeroute, the team of the company's experts had considered 7 different solutions for warehouse logistics.

All of the solutions were oriented on average goods and did well with planning packaging for 2-3 different items. However, they weren't designed to work with a large assortment. None of the solutions could consider the different weight and size characteristics of the goods and the many types of packaging. At the same time, the developers refused to adapt their products to the needs of the company, offering only ready-made standard software.

In addition to being able to work with non-standard requirements, Veeroute had two key advantages, compared to other candidates:

1. A clear understanding of the final product's characteristics and how to implement it
2. Terms of implementation acceptable to the customer

After analyzing all the proposals, the company's management decided to launch a joint project with Veeroute.

Solution

The project started in November 2021.

At the beginning of cooperation, the major objectives were formulated:

1. Ensure compliance with the retailer's requirements for the transition to the Single Order system
2. Increase the goods' packaging density
3. Reduce the number of vehicles used
4. Reduce logistics costs

The product was released in June 2022.

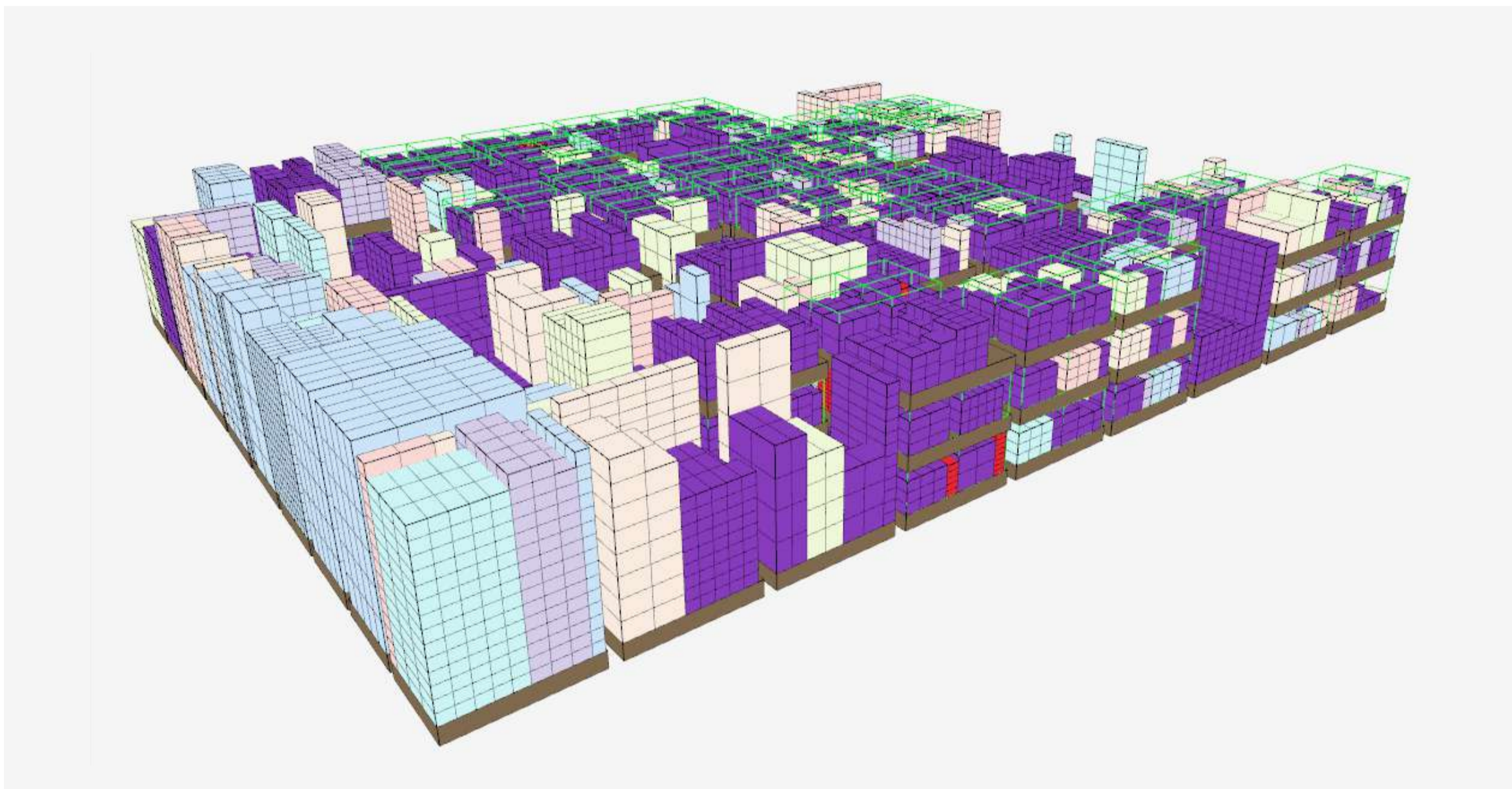
Veeroute Packer

The resulting project was a new cloud-based packaging optimization service, Veeroute Packer. It can optimize palletizing in seconds while taking into account all parameters, requirements, and compatibilities.

Veeroute Packer needs less than a minute to create an optimal palletizing plan for 50,000 packages. For the company's data, the estimated time is less than 10 seconds.

How does Veeroute Packer work?

1. The Veeroute Packer cloud-based service is integrated into the customer's automated system.
2. The system accesses Veeroute Packer and transmits the data about the Single Order, as well as the weight and size parameters of the packages and pallets, height and weight restrictions, etc.
3. Veeroute Packer releases into the system: — an elaborate plan for placing each package of goods on a pallet — if necessary, detailed with a given accuracy of up to 1 mm; — the optimal number of vehicles needed for delivery of the Single Order.



Results

After two months of using the Veeroute Packer in daily operations, the company's team summed up the initial results.

1. Logistics costs were reduced by 50%.

The solution allowed the company to cut the logistics costs twice. Before the product was implemented, order picking and shipping costs accounted for 8,94% of the company's turnover. With Veeroute Packer, this figure became twice less — 4,5%.

2. The volume of everyday load on office workers was reduced by 50%.

After the transition to the Single Order system, the volume of the same type of operations has drastically decreased. The workflow was optimized by 33%. As a result, the number of employees constantly involved in order processing has lowered by 1.5 times.



I am glad to be expressing my gratitude to the Veeroute team for a cool, modern, and unique product that allowed us to turn our daily routine into effective digitized work with one click of a button. The ability to hear the client and adapt the unique features of your product to our warehouse operations has brought us to a new level of customer service. Thank you!

— **Commercial Director**