



GREEN LOGISTICS

OPTIMIZE YOUR PACKAGES TO REDUCE THE ENVIRONMENTAL IMPACT



Logistics is the lifeblood of our economy. Without it, there is no link between producers and consumers, therefore no more industry or trade. The severity of the consequences of climate change, however, requires that we now be more resource-efficient. Logistics will remain essential, but it must adapt today by reducing its impacts as quickly as possible. In terms of Greenhouse Gases (GHG), the main issues are linked to road and air transport.

But whether it is the location of factories versus that of customers, or the availability of low-carbon transport alternatives, changes will take years. In contrast, internal levers are available as of today: they are linked to order preparation by optimizing the use of packaging. Let's take a look at a concrete impact through the implementation at a distributor, a SAVOYE customer.



INITIAL SITUATION

REDUCING VACUUMS, SPEEDING UP FLOWS: AN AMBITIOUS LOGISTICS PROJECT



A distribution platform for hardware, tools and industrial supplies, located in France and delivering more than 120,000 references directly or via its branches to professional customers:

- Managing 3000 orders / day
- Shipping an average of 3,800 packages per day
- Using 5 different conventional RSC (US cases) carton formats, manually formed and closed
- With a 43% carton filling rate (o i.e. 69m³ of empty space shipped daily)

The project: the implementation of a latest generation WMS and three packaging lines, combining PAC600 formers and Jivaro closing machines from SAVOYE.

ELIMINATE, REDUCE, RECYCLE

THE CORRECT OPTIMIZATION ORDER!



The package with the least impact... is the one you didn't send!

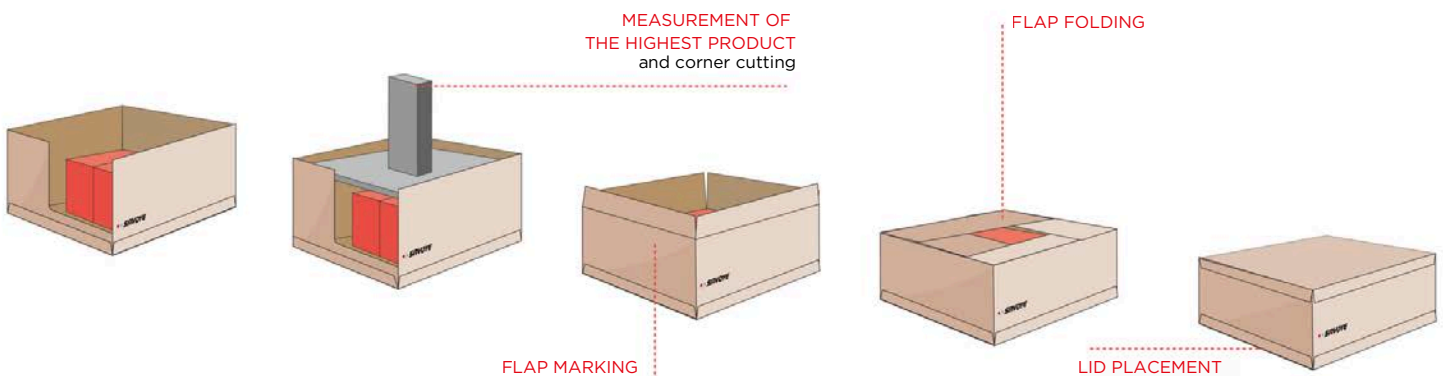
By adjusting customer lead times, we can avoid partial deliveries and group orders together. An advanced WMS can merge several orders into a single package, optimize item placement (Tetris mode) and choose the most suitable box.

Result: up to 20% fewer parcels, i.e. 120 tons of cardboard and 100 tons of CO₂ saved per year.



For reasons of purchase optimization and station availability, it is not possible to use an infinite number of cardboard formats. Or rather it is possible, by adjusting the height of each carton.

Thanks to Jivaro automated closing machines, the height of the carton is precisely adjusted to the content.



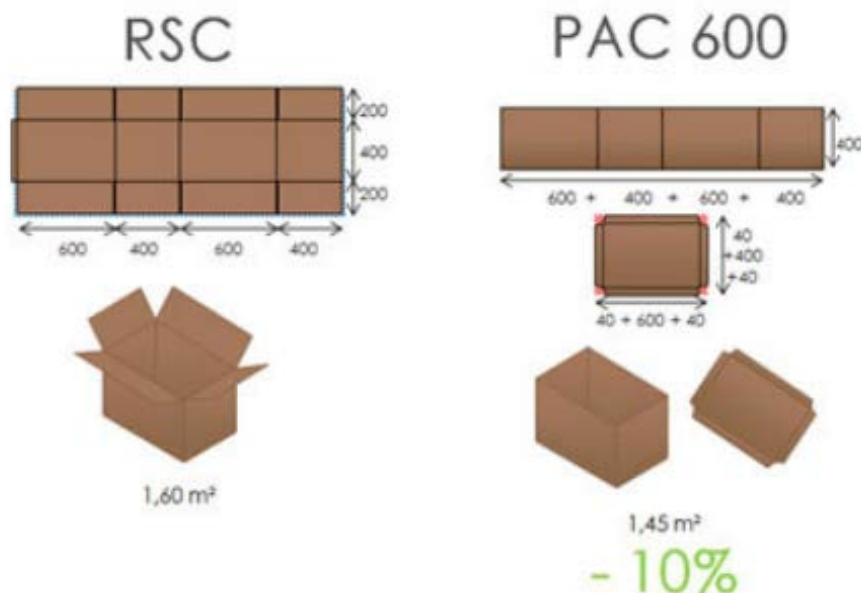
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While rationalizing the number of package formats from 5 to 3, the combination of Jivaro machines with PAC600 formers offers three advantages:

1

By using PAC 600 belt and double lid cases, reduces the required surface area of cardboard by 10% compared to US cases (from 2745 to 2439 m per day). After one year, this represents 35 tons of CO₂.



2

While the initial fill rate was 43% in our case (corresponding to the average fill rate observed in e-commerce), the fine height adjustment increases this rate to 78% and makes it possible to eliminate the need for wedging. That is an additional gain of 700 kg of paper per day. This is equivalent to **66 tons of CO₂ per year**.

3

Finally, each day nearly 60 m³, i.e. the volume of a truck trailer is saved. Assuming a 100 km round trip to reach the shipping hub, 30,000 km of trucks are avoided per year, i.e. 39 tons of CO₂.

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THE CORRECT OPTIMIZATION ORDER!



This seems obvious. This is in fact what almost everyone does, thinking they've sorted the problem through recycling. They're wrong...

Studies by Federec (Federation of Recycling Companies), taken up by ADEME, show that the production of recycled cardboard, though it uses 4 times less energy, emits twice more CO₂ than virgin cardboard. This is primarily due to the efficiency of the new cardboard manufacturing processes.

Results per ton collected	Primary material (kWh)	Recycled material (kWh)	Primary material (kg eq CO ₂)	Recycled material (kg eq CO ₂)
Paper stock	9 193	2 739	297	317
Cardboard	13 115	3 017	390	670

Results of the FEDEREC study

If we take into account other parameters such as land use, we can conclude that there is a draw between virgin and recycled cardboard. This reinforces the benefit of limiting the use of cardboard upstream.

Step	Lever	CO ₂ gain	
Eliminate	Package consolidation by the WMS	135 T	135 T
Reduce	Cardboard surface area reduction	35 T	141 T
	Elimination of wedging paper	66 T	
	Reduced transport needs	39 T	
Recycle	Recycled cardboard	None	-

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Ultimately, more than 140 T of CO₂ are saved each year thanks only to the 3 packaging lines implemented. This corresponds to the amount of CO₂ emitted to circle the earth 18 times by car.



THE 3 CIRCLES OF SUSTAINABLE DEVELOPMENT

RECONCILING THE ENVIRONMENT, PEOPLE, AND THE ECONOMY

Beyond the environmental aspects, the reduction in consumption has an economic impact. Thanks to the gains in the surface area of cardboard purchased and the efficiency of the workforce, the return on investment of packaging lines combining PAC600 and Jivaro machines is of the order of 3 years, while these machines are designed to last more than a decade, with an extremely low number of wear parts. If we estimate a carbon tax of 120 per ton of CO₂ (current value in Sweden), the economic gain linked to GHG emissions is of 170 K over 10 years.

Equally important is customer perception. Over-packaging has no added value from the customer's point of view. Worse, while 53% of online sales customers claim to take the environmental aspect into account in their purchases, receiving packages that are half empty or filled with wedges gives a negative view upon receipt.

This is particularly true for professionals who must also pay a cost of removal proportional to their volumes of waste.

THE 3 CIRCLES OF SUSTAINABLE DEVELOPMENT

RECONCILING THE ENVIRONMENT, PEOPLE, AND THE ECONOMY



01



Eliminate packages using WMS

A high-performance WMS allows you to group your orders and optimize item nesting in fewer packages

-135 T 

02

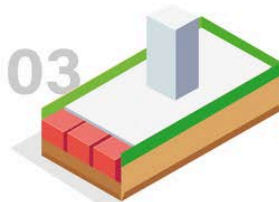


Reduce cardboard surface area

Replacing US crates with PAC600 with lid reduces the required cardboard surface area by 10%

-35 T 

03



Reduce the number of wedging elements

The use of Jivaro-type box closer allows the height of the packages to be adjusted and eliminates the need for wedging

-66 T 

04



Reduce the volume transported

Packages consolidation and the volume gains achieved by the Jivaro bow closer reduces the number of shuttles needed.

-39 T 

05



Use of recycled cardboard

Contrary to what one might think, a Study by Federec (**) shows that recycled cardboard emits no less CO2 than new cardboard

-0 T 

gebaseerd op een voorbeeld waarbij een klant 3800 colli per jaar verzendt

**https://www.bilans-ges.ademe.fr/fr/accueil/documentation-gene/index/page/Papier_carton_et_articles_en_

 **SAVOYE** 

CONCLUSION

More than recycling, the best economic and environmental gains are achieved by process optimization, reducing at the source the volume of packaging and the volume to be transported.

For more information on optimizing your logistics, please contact the SAVOYE or MACS teams.