



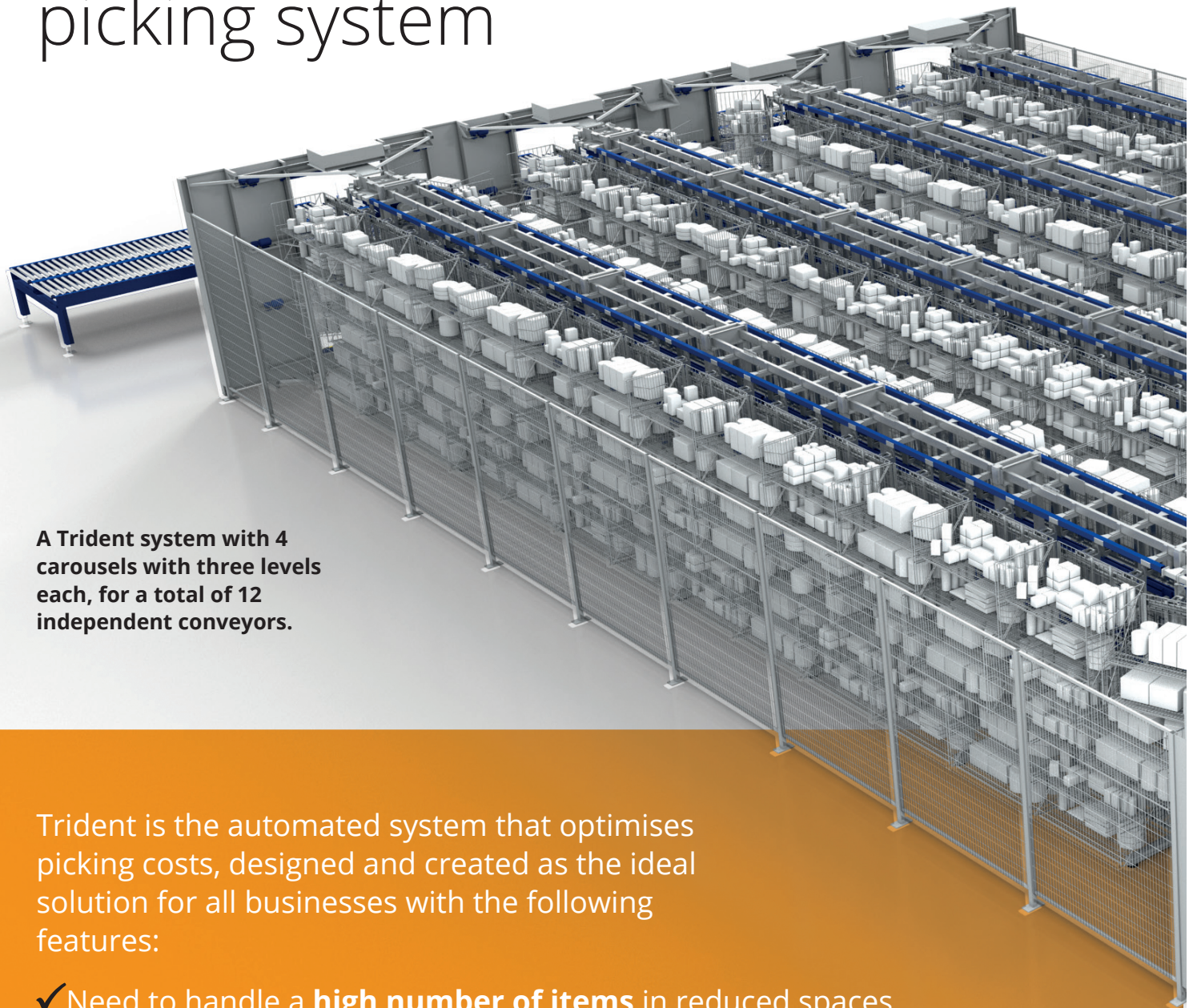
# TRIDENT, A REVOLUTIONARY PICKING SYSTEM

Multistorey horizontal rotating  
warehousing system with  
independent levels

**T**TRIDENT

Powered by ML-Systems APS

# Trident, a revolutionary picking system



A Trident system with 4 carousels with three levels each, for a total of 12 independent conveyors.

Trident is the automated system that optimises picking costs, designed and created as the ideal solution for all businesses with the following features:

- ✓ Need to handle a **high number of items** in reduced spaces
- ✓ **Breaking up of orders in many parts**
- ✓ High number of items in medium **and low rotation class**
- ✓ **Products** with **diverse** sizes and weights

Trident is also an ideal solution for sorting orders for large scale picking operations.

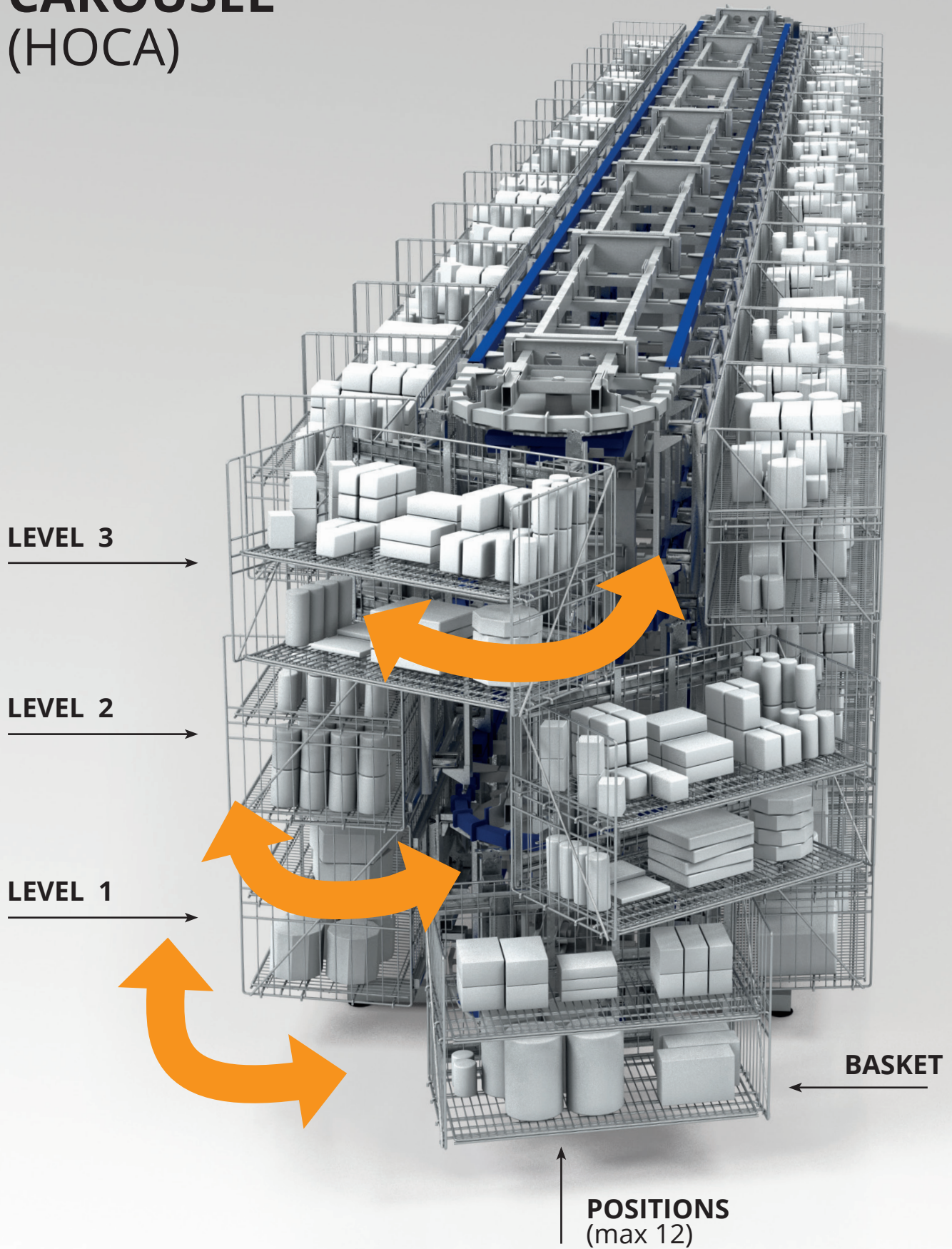


With Trident, **it's no longer man that moves towards the product, it's the product that moves towards man**, with such a speed that no one is ever kept waiting.

An exceptional performance, which is the result of a unique solution patented by Metalprogetti: the multistorey horizontal rotating warehousing system with independent levels ensures swift delivery as well as loading of items on to and off the system.



# CAROUSEL (HOCA)





# Quick and efficient

Trident is truly revolutionary : **it is the only horizontal** revolving warehousing system on several **independent levels**. At each level, the baskets full of items rotate autonomously, choosing the direction of rotation in order to reach the operator who needs to retrieve an item from that basket, the faster way.

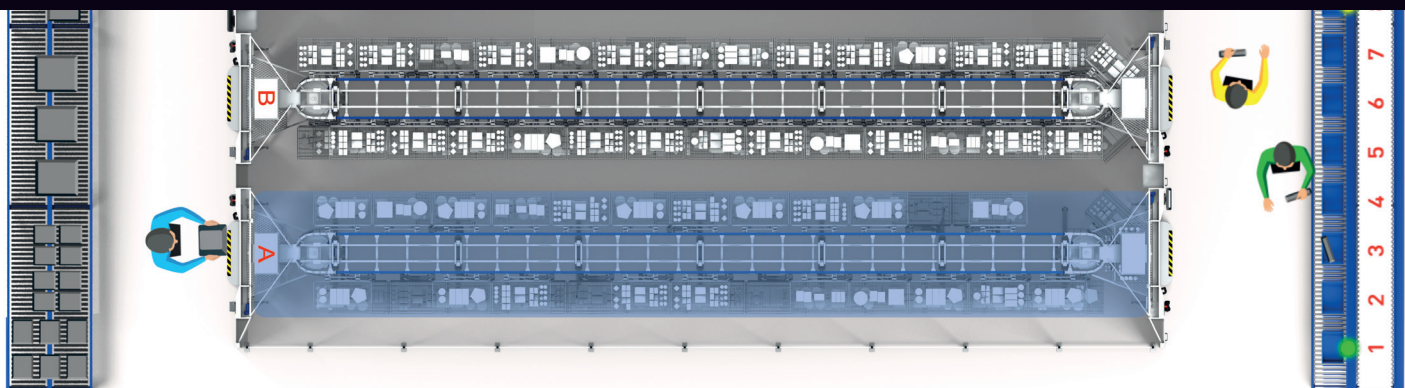
Trident is quick: **the rotation speed** of the baskets, set depending on the items to be conveyed, **varies from 18 to 30 meters/minute**.

Trident is efficient: it consists of several levels that operate independently from one another and of baskets that can contain up to 12 item types (6 for each of the 2 shelves in the basket), which means the same item type can be stored in different baskets and on different levels, thus significantly reducing the time necessary to assemble orders.

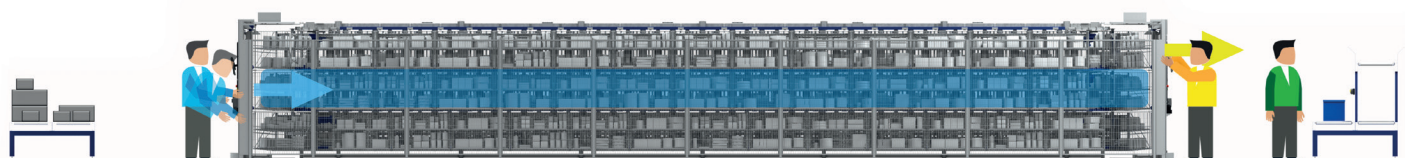
Another one of Trident's winning features is the possibility of refilling and picking products simultaneously.

Indeed, if refilling is being carried out on one of the levels, the other levels are free and available for picking.

## SIMULTANEOUS LOADING AND UNLOADING



While one of the operators refills the goods at the blue level (level 2), the other two levels (1 and 3) are free and available for picking by the yellow and the green operators.



**Loading phase**

**Unloading phase**

## It conveys items in various shapes and sizes

Trident can handle, simultaneously and in complete safety, items in various shapes and sizes. The storage baskets are fixed to the conveyor belt in 4 points, which ensures a maximum stability even at a high speed.





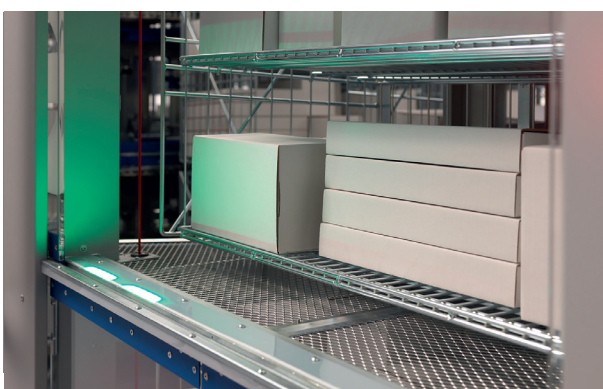
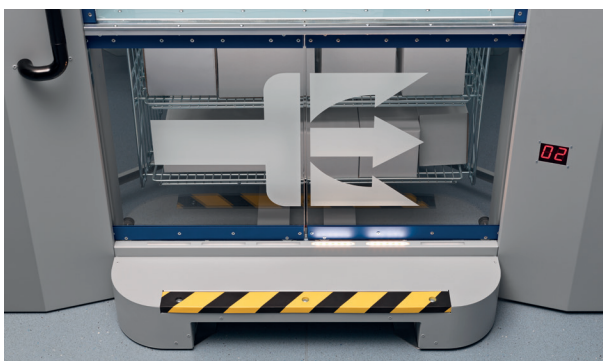
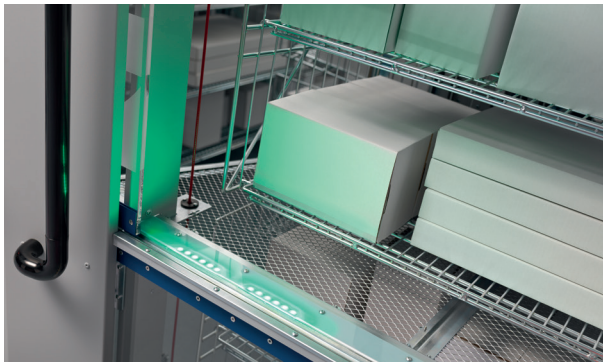
# User-friendly and easy to use

Trident is easy to use and it doesn't require any specific training. The actions to be carried out are intuitive and learnt in no time.

Everything has been designed to ensure maximum comfort and ergonomics. Operations are made

easy by the use of light indicators and displays that indicate the position and quantity of the products. All this, added to the optical scanner:

- >> **Simplifies staff training**, even if there is a high staff turnover
- >> **Reduces the risk of error** down to practically zero



## LED LIGHTS FOR PICKING

The led lights indicate which part of the basket to pick from (Pick to Light), while the display gives the number of items to pick. The light on the roller conveyor shows where to put the items.

## PUSH BUTTONS AND OPTIC READER FOR ORDER MANAGEMENT

Different coloured buttons are a great help for Put to Light operations, as well as the optical scanner, that can easily be integrated with other peripheral devices or any other identification system.

## AUTOMATIC SAFETY DOORS

Access to the goods and to the machine is safe at all times: when the doors are opened, this automatically stops the carousel at the corresponding level rotating.

## STABILITY OF THE PRODUCTS

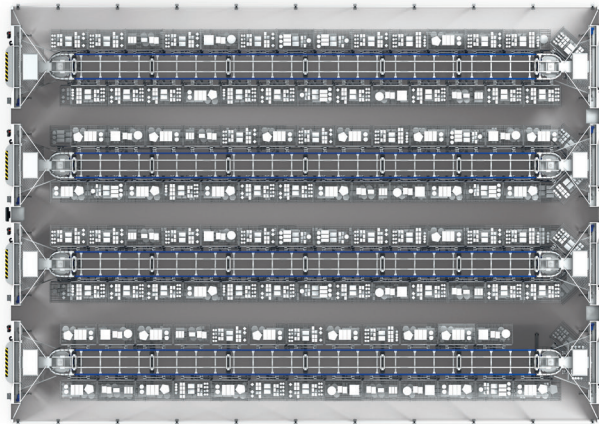
All the system is designed to ensure maximum stability for the items on the conveyors, which represents a significant advantage in the case of fragile or oddly-shaped products.

## Configurable, modular and flexible

Trident is a very flexible system that can be modulated in function of requirements and space available.

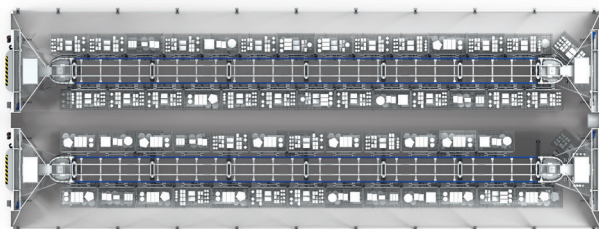
### AN INFINITE NUMBER OF CONFIGURATIONS IS POSSIBLE, REGARDING:

- >> The number of carousels in line (width)
- >> The number of baskets on each independent level (length)
- >> The number of fronts for each carousel (two fronts: one for picking and one for refilling, or a single front used both for picking and for refilling)



#### SOLUTION WITH 4 CAROUSELS AND 2 FRONTS

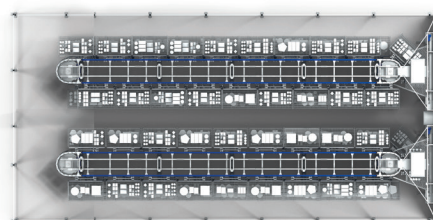
Allowing a quick handling of high quantities of orders (using up to 4 operators)



#### SOLUTION WITH 2 CAROUSELS AND 2 FRONTS

#### WHEN VOLUMES ARE REDUCED

Or if operative requirements make it possible to manage the refilling and the picking phases at different times, the SOLUTION WITH A SINGLE FRONT is ideal.







## WHEN VOLUMES ARE REDUCED

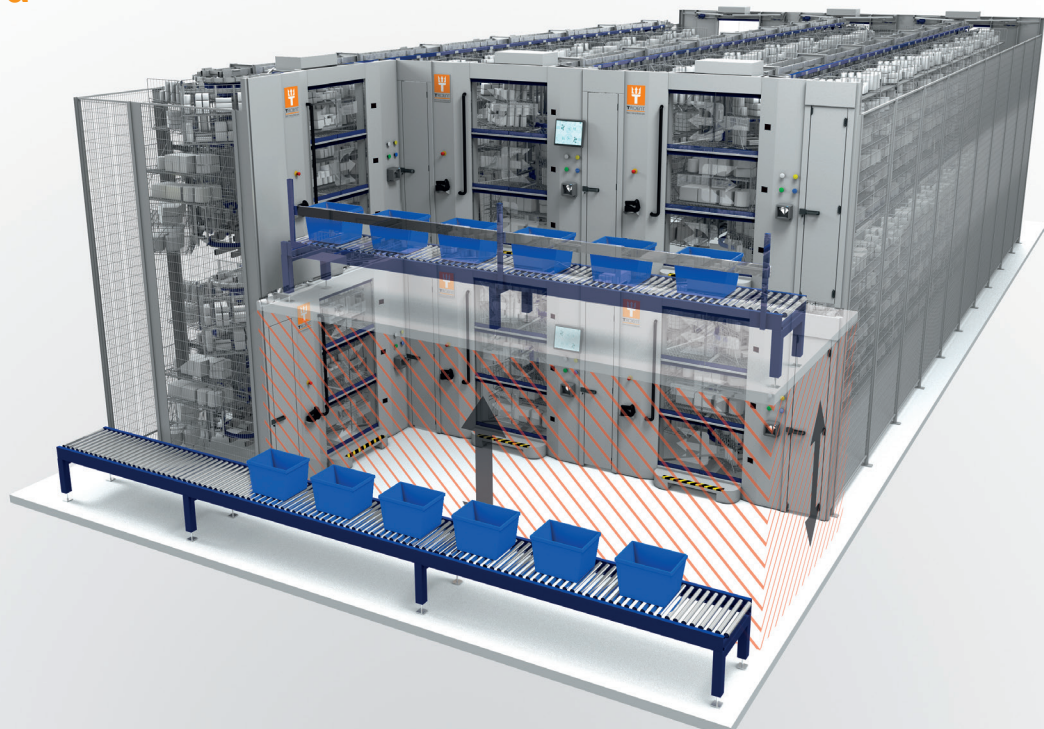
Or if operative requirements make it possible to manage the refilling and the picking phases at different times, the **SOLUTION WITH A SINGLE FRONT** is ideal.

## TRIDENT CAN ALSO BE BUILT AS A MULTISTOREY WAREHOUSING SYSTEM



Solution with fixed footboard

## Solution with mobile footboard



## Easy to interface with the business's management system

The Trident PLC can be configured to communicate with the business's warehouse management system.

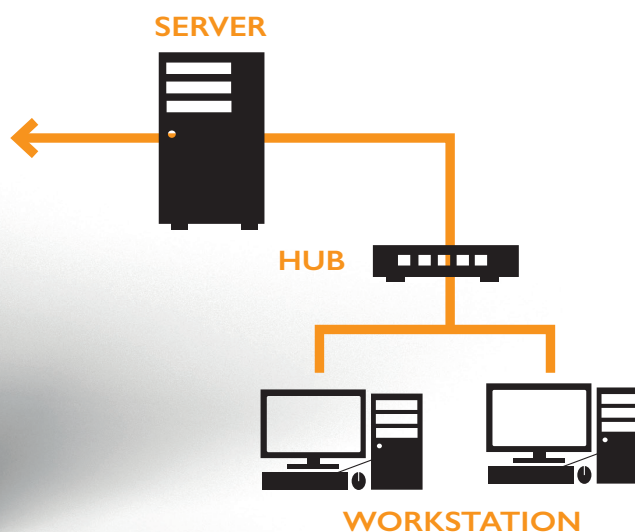
This way, the business's order management system will control the whole of Trident and its operations.

If no particular management system is being used, Metalprogetti can set up a customized software system to integrate with Trident.



## Technical data

NUMBER OF BASKETS PER LINE	24			28		
Length	13.285			15.265		
Positioning speed	18 m / min			18 m / min		
Average positioning time	24 sec.			28 sec.		
	Total number of baskets	Average basket positioning time (in seconds)	Volume cubic meter	Total number of baskets	Average basket positioning time (in seconds)	Volume cubic meter
1 Hoca width 3.120 m	72	8	21,6	84	9,3	25,2
2 Hoca width 5.670 m	144	4	43,2	168	4,7	50,4
3 Hoca width 8.220 m	216	2,7	64,8	252	3,1	75,6
4 Hoca width 10.770 m	288	2	86,4	336	2,3	100,8



	32			36		
	17.245			19.225		
	18 m / min			18 m / min		
	31 sec.			34 sec.		
	Total number of baskets	Average basket positioning time (in seconds)	Volume cubic meter	Total number of baskets	Average basket positioning time (in seconds)	Volume cubic meter
	96	10,3	28,8	108	11,3	32,4
	192	5,2	57,6	216	5,7	64,8
	288	3,5	86,4	324	3,8	97,2
	384	2,6	115,2	432	2,8	129,6



**TRIDENT**  
Made in Italy by Metalprogetti



## The advantages of choosing Trident

### STEEP INCREASE IN PRODUCTIVITY AND COST REDUCTION

By automatically conveying goods to the operator without waiting time, Trident reduces order assembly times to a minimum.

Trident increases staff productivity and keeps it constant during the whole work shift: indeed, the operator, by avoiding extra footsteps to pick the products, is less tired and more productive.

### NO WASTED TIME

Trident's speed means that there are always some open doors waiting for the operator to come for picking, rather than the opposite. As soon as the item has been deposited, the operator just has to go to the nearest open door and collect the products signaled by the led lights.



## SPACE OPTIMIZATION

Trident has been designed to optimize the space available, without leaving any empty space.

Compared to other automated picking solutions, Trident has the best ratio regarding stored volumes/space occupied.

## PREVENTS PRODUCT THEFT AND LOSS

With Trident, item thefts and losses cannot occur, because the system is closed and the item availability is always updated and precise, with full audit trails of movements always available.

# ADVANTAGES

# TRIDENT

## Side protection barrier

To avoid accidents and unwanted thefts.



## SIMPLE AND RELIABLE OPERATION

Trident means much more hardware than software, based on precision mechanics. Its operation is simple and reliable and requires very few checks, that can be carried out by a general technician.

## IN CASE OF MACHINE STOPPAGE DOWN TIME IS MINIMISED

With Trident, even if one of the levels breaks down, this doesn't stop operation: each level is independent and the same item type can be stored on different levels.

In the case of the breakdown or stoppage of one of the levels, the others keep working as normal. And even in the unlikely event of a total failure, 100% of the goods can be reached at eye level, as the operator can safely access them by using the side doors.



### Automatic sliding doors

Access to the goods and to the machine is absolutely safe: when the doors open, this stops the carousel from moving to allow for the picking operation to take place. There are also mechanical barriers that prevent contact with the other rotating levels.

### Side doors for safety access

In the case of an emergency (breakdown or full stoppage), when this door is opened it blocks the carousel's rotation, allowing the operator to access the aisles and carry out the picking operation.

## SIMPLE AND UNEXPENSIVE MAINTENANCE

Everything is easily accessible on Trident, and all checks can be performed by a general technician. Besides, most of the components can easily be found on the market.

In any case, Metalprogetti has a customer service hotline that is available 7 days a week, 365 days a year. If necessary, Metalprogetti's customer service is organized to offer its services on site all over the world. And the replacement of the system's few specific spare parts is obviously guaranteed.

## FASTER RETURN ON INVESTMENT

By using the Trident system, thanks to its high productivity, the return on investment is possible in a much shorter time than with other automatic warehousing systems.

# Inside Drive

**M**ontpellier-Lattes is one of the main Leclerc Drives in France.

It opened in 2011 in an 1800 sqm location with 12 lines, Leclerc chose to partially mechanize part of the order picking from the start. Today, Leclerc Drive Montpellier-Lattes is equipped with 2 Trident systems with 4 gates each, place on either side of a double loading track. The automate operates from 7 am to 7.30 pm, from Monday to Saturday.

There is space for progression if the growing customer trend continues...

## IN NUMBERS

**30** The number of orders simultaneously prepared with Trident

**96** The number of baskets (where the items are stored) for each gate.  
In Lattes, with 8 picking gates, there are therefore 768 baskets.

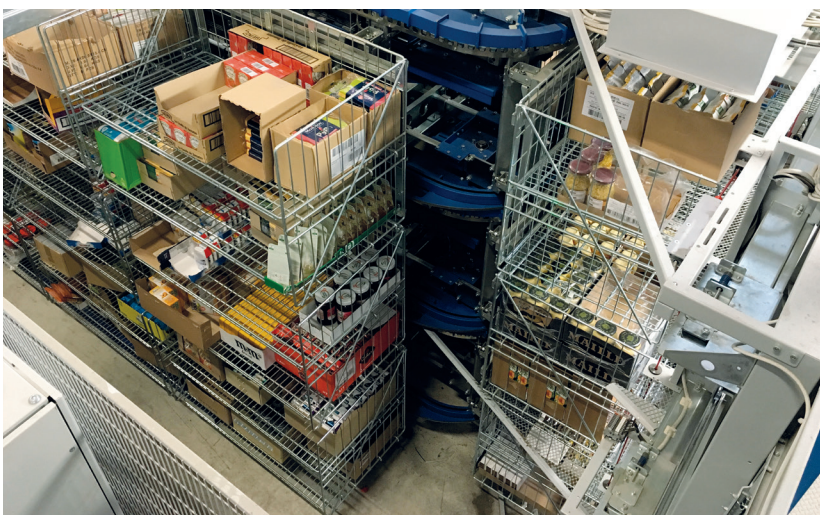
**12** The machine can manage up to 12 **item positions per basket (for small items)**.  
On average, there are 6 item types per basket.

## BEHIND THE SCENES

As the three basket levels are independent, refilling can be carried out without stopping the picking operations. With obvious time saving!



*Daniel Exbrayat,  
the Drive's  
manager*



## HOW DOES IT WORK ?

Trident is based on the principle of a conveyor on which baskets are fixed. It is the product that moves around instead of the operator having to do so.

Each carousel only stops in front of the gate if an item has to be picked out of the basket. A colour system indicates the item.

After retrieving the item out of the basket, the operator turns round and puts it into the box identified with a light. It's the "pick to light" system.

On the other side of the system is the loading area. The products are scanned and stored in a box. Meanwhile picking continues thanks to the 3 independent levels.





## Why Leclerc-Drive in Montpellier-Lattes chose Trident...

*Daniel Exbrayat, the Drive's manager, explains why.*

### **Montpellier-Lattes is one of the first Drives in France to choose to mechanize picking. Why?**

This choice was made from the start to satisfy several goals. First of all, obviously, productivity. This is one of the major aspects of the Drive, as the prices we offer our customers are the same as the ones they would pay in the supermarket, without any price supplements. Then, we also wanted to improve work conditions and in particular to limit the operators' footsteps. With the automation, it's no longer man who moves towards the product, it's the product that moves towards man!

### **However, you dismantled the first automatic system that you had installed to replace it with Trident...**

Yes, it's true, but this doesn't question our interest for a mechanization of picking operations. With Trident, we opted for a solution that allows us to refill the machine without interrupting picking. This possibility is what interested us most, in particular as it satisfied our productivity goal.

### **As a rule, automatic systems have a weakness: they can break down. Don't you fear this happening?**

Well yes, of course. But experience shows that breakdowns really are very rare. And they don't cause disturbance as maintenance is very fast. As per contract, a service team intervenes within maximum 4 hours. But in actual fact, it's even quicker than that!

### **How do you manage the product assortment on Trident?**

Out of 7500 Drive item types, 4000 are handled by Trident. These are only dry products. Items that sell in large quantities (Nutella, for example, which is to be found on a pallet in the warehouse) or voluminous products (nappies, crisps, etc.) are excluded from the Trident assortment.

### **Are the operators specialized in their job?**

There is a team of 8 operators who are specialized on the Trident. But there are also another fifteen other operators who can work on Trident if necessary.





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