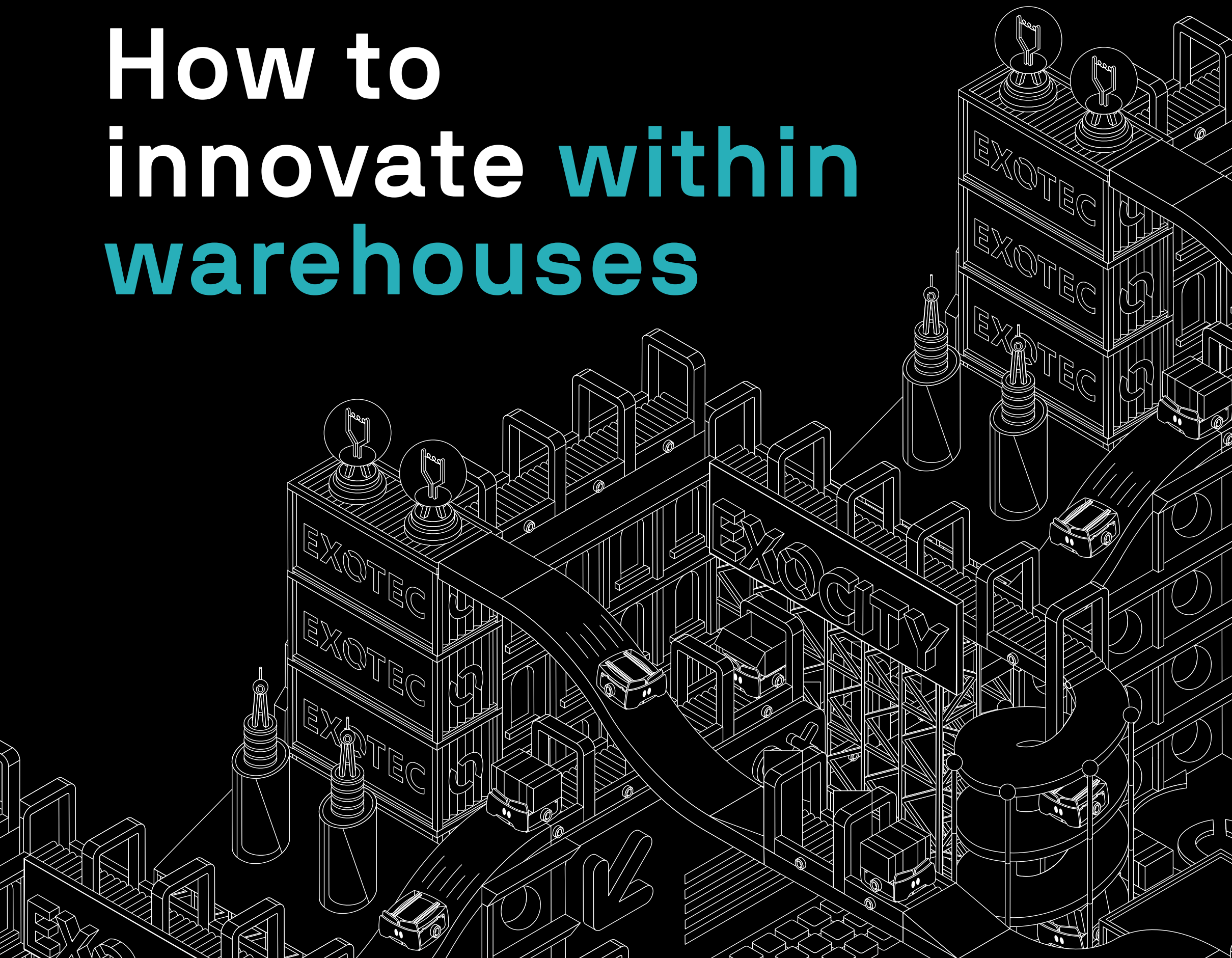
How to innovate within warehouses



Addressing the challenges of the intralogistics sector

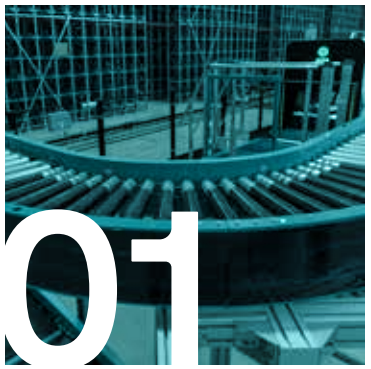
INTRODUCTION

In a world confronted to multiple crises, risks, and uncertainties, the supply chain sector of today requires increased agility, resilience, and sustainability. Beyond mere observations and wishful thinking, this white paper aims not only to decipher a complex reality experienced at various levels by all logistics stakeholders but also to offer solutions to meet the current challenges faced by the industry.

Within warehouses, these solutions must be scalable and adaptable to meet the ever-evolving needs and changing activity rhythms of intralogistics operations. They must also be more sustainable and efficient, serving manufacturers, distributors, and e-commerce players worldwide.

We firmly believe that a combination of hardware and software innovation, coupled with human intelligence, will enable warehouses to address their growing challenges. And this is precisely what we aim to demonstrate throughout this document, designed not only as a practical guide and a market overview but also as a platform for reflection and a non-exhaustive presentation of what Exotec®, as a designer and integrator of innovative robotic solutions, is capable of offering to its current and future clients.

SUMMARY



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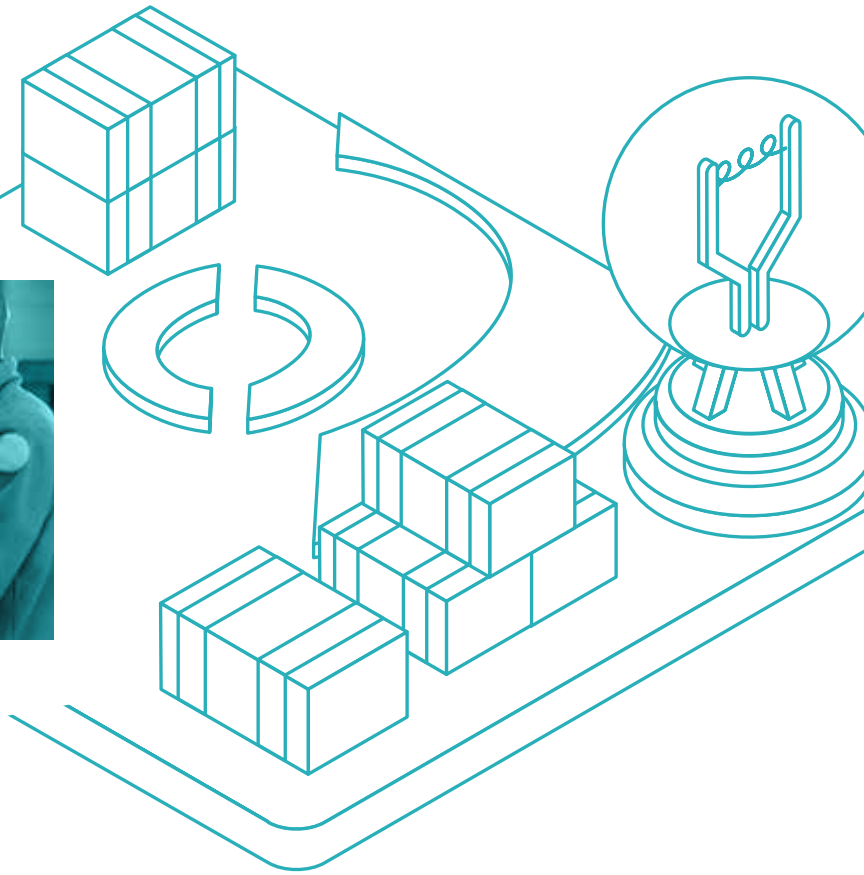

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01

Challenges and stakes of modern intralogistics

Because the development of innovations is always more or less rooted in real-world issues, the growing need for traditional automation and warehouse robotization can be attributed to various persistent challenges, now well-known to intralogistics professionals.

1. Land unavailabilty

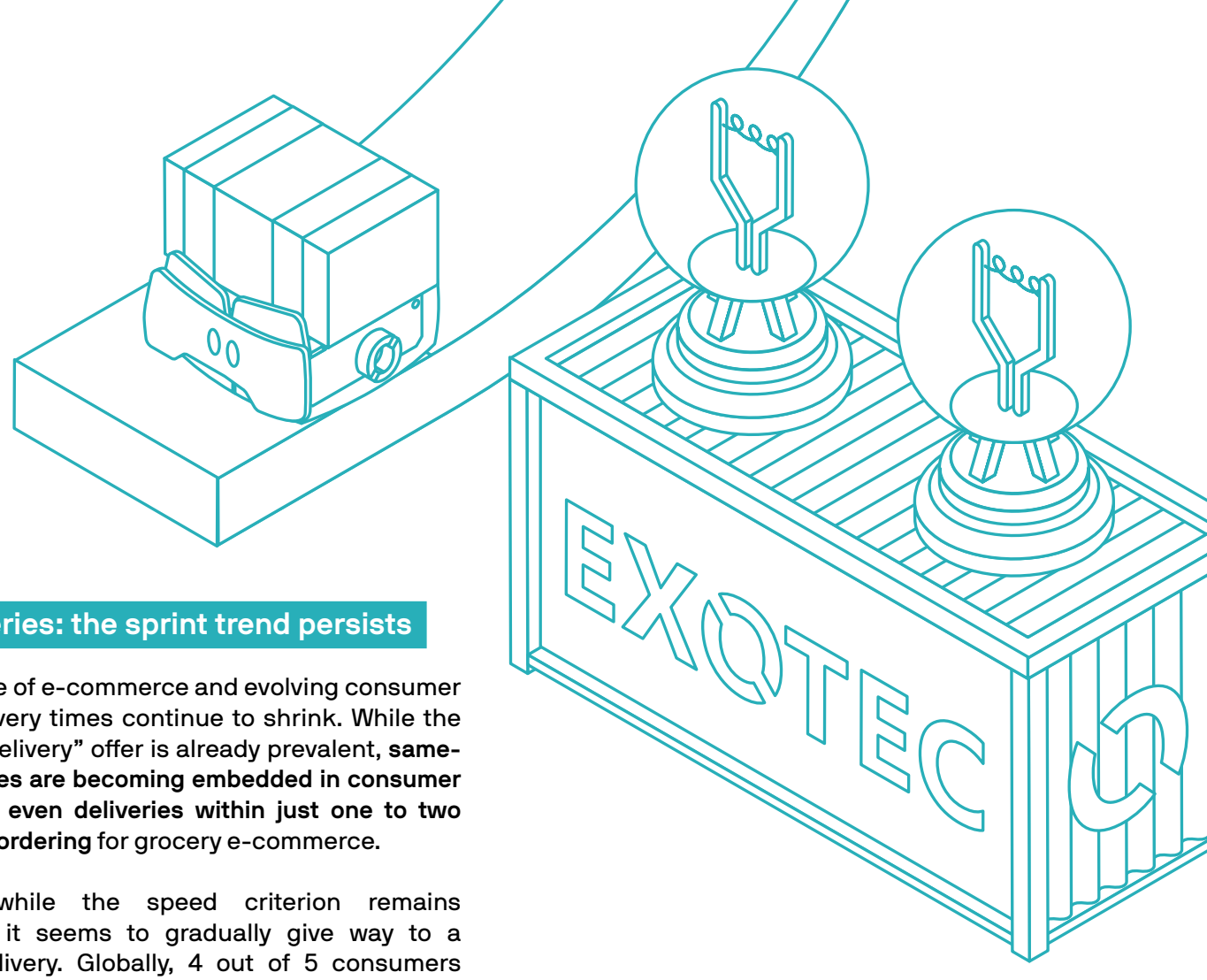
According to a Cushman & Wakefield study, immediate availability in terms of logistics land had dropped to **2.3 million square meters in France** by the end of 2022, a 1% decrease compared to 2021. The corresponding vacancy rate stands at 4.6%, which is the lowest level of availability recorded since 2008. This initial challenge triggers the following two.

2. Praise for density

Faced with land unavailability, the necessary densification of warehouses becomes mechanically apparent, driven by two other factors. On the one hand, **the increasing real estate costs,** and on the other hand, **the desire of logistics professionals to get closer to major urban centers,** thus implying a reduction in ground footprint. Traditionally extensively spread out, logistics lines must now all gather, and rely notably on automation/robotization systems capable of accommodating this constraint.

3. Extending vertically

In terms of densification, the aim now is not only to go further but also higher. The scarcity of logistics land drives the construction of warehouses upwards to make the most of the vertical space available rather than the ground space. This trend contributes to **the growing necessity for automation and robotization to conduct logistics operations that are increasingly performed not at human level** but also not even at the level of forklifts. This trend, which has existed for many years, is confirmed globally, where warehouses can now reach very high heights, sometimes exceeding 20 meters tall.



4. Deliveries: the sprint trend persists

With the rise of e-commerce and evolving consumer habits, delivery times continue to shrink. While the “next-day delivery” offer is already prevalent, **same-day deliveries are becoming embedded in consumer habits, and even deliveries within just one to two hours after ordering** for grocery e-commerce.

However, while the speed criterion remains prominent, it seems to gradually give way to a greener delivery. Globally, 4 out of 5 consumers (79%) now tend to favor an environmentally friendly delivery service - which generally implies less speed - compared to 74% in 2022, according to an Auctane/Retail economics study. Similarly, 70% of consumers are willing to wait up to five days for a greener delivery, according to a survey by a KPMG/FEVAD.

Hence, companies are now faced with the necessity - albeit not yet fully acknowledged - of integrating these new, environmentally friendly shipping methods in their services.

5. The weight of free shipping and returns

According to statistics, free shipping and returns still seem to be a decisive factor in the e-consumer’s

“We chose to automate our supply chain to cope with our deployment projections. These would have required an immense ground area to achieve the targeted catalog depth.”

Éric Gagnaire, *CEO of Rediv*

purchasing behavior. Globally, 69% of them consider that a free delivery offer encourages them to order more, as stated by Sendclound. Consequently, they are increasingly less willing (73% in 2022 versus 76% in 2023) to pay for shipping in the case of a returned item, according to the Auctane/Retail economics study. However, this study also indicates that younger generations might be more receptive to the idea of contributing to shipping and return costs. This trend remains emerging to this day.

Overall, **the economic burden of shipments still heavily weighs on the companies,** urging them to seek other sources of financial optimization throughout their entire logistics chain to offset this expense.

6. Operators are (still) in short supply

In 2017, one-third (33%) of French companies in the logistics sector reported experiencing difficulties in finding candidates for their vacant positions. Today, this percentage has surged to nearly 60%, a significant increase in a short period of time, clearly confirming the trend. Nowadays, an overwhelming majority (73%) of employers even consider this labor shortage as a direct threat to the survival of their businesses, according to Culture RH.

“No more need for our on-site operators to carry heavy loads and make multiple back-and-forth trips on site. They are now developing new skills and moving towards new careers within the group.”

Rami Baitiéh,
Executive Director France, Carrefour

This challenge, coupled with a growing need for performance and responsiveness, naturally leans towards the automation/robotization of intralogistics operations, especially for tasks that demand significant human resources:

- The transportation of goods from storage areas to order preparation zones. Systems known as “goods-to-man” or “goods-to-person” entrust this mission to robots capable of navigating the warehouse to collect items for an order and deliver them to operators for the preparation and shipping phases.

- The order preparation process itself, which can also be partly entrusted to picking robots capable of continuous operation, offering a significant advantage for night shifts - typically not preferred by current operators - and during seasonal peaks when labor shortages become simply unsustainable for the sector.

Beyond improving warehouse efficiency, automation/robotization also enables to retain workers by allowing them to avoid repetitive and arduous tasks and provides them with a more specialized and hence enriching work experience through interactions with these new systems.

7. A necessary differentiation

Confronted to numerous challenges and heightened competition due to omnichannel commerce, the supply chain has emerged as a major differentiation means. The robotization of certain activities that don’t generate added value allows operators

to **dedicate their time to tasks that generate greater added value** for the end customer, such as packaging, order customization, and creating a unique customer experience.

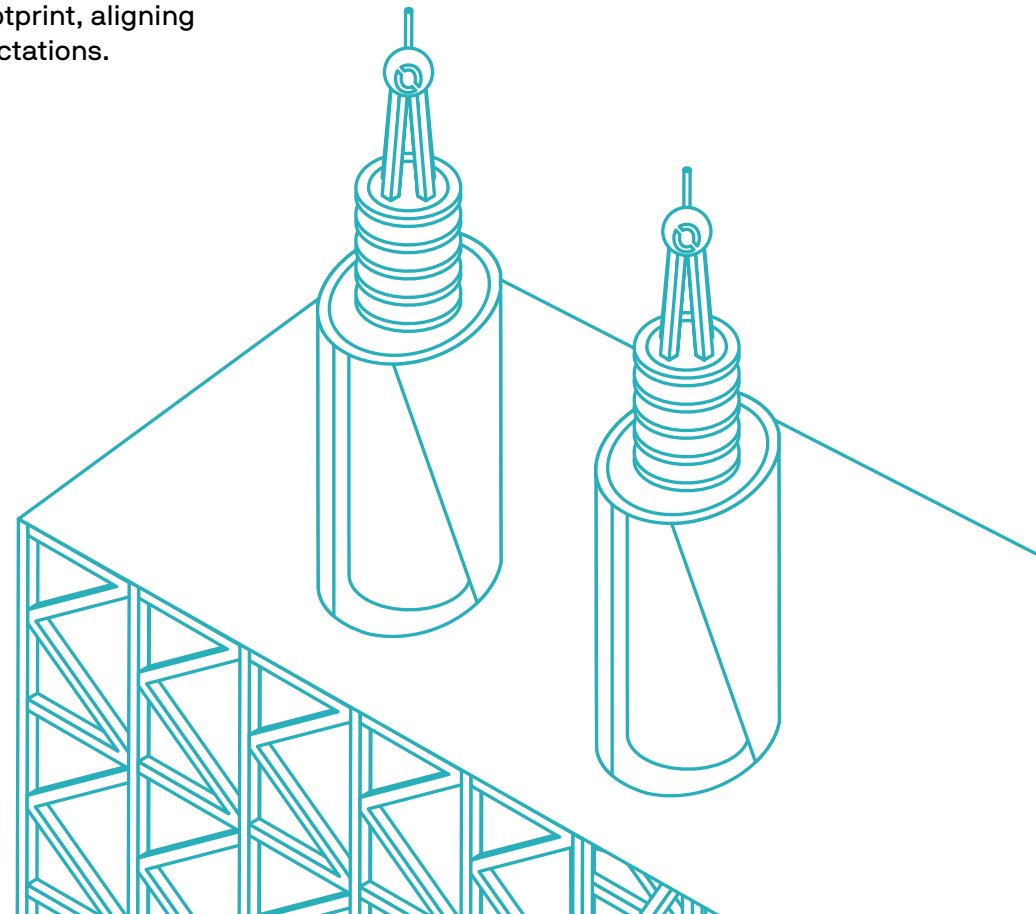
8. Lasting rise in energy costs

When discussing automation, the issue of energy is undoubtedly crucial. In this regard, electricity suppliers anticipate a **significant increase in electricity prices for professional clients in 2023.** This surge is attributed to the rise in prices of raw materials and energy in Western Europe since the end of 2021. According to electricity suppliers' estimates, selling prices are expected to increase by an average of 84% compared to 2022. Despite assistance and capping measures, this rise in energy prices will substantially impact warehouses employing automation. Consequently, these warehouses increasingly consider the energy consumption levels of a solution before choosing an automation/robotization provider. This often goes hand in hand with a lower carbon footprint, aligning with consumers' environmental expectations.

9. When omnichannel becomes the norm

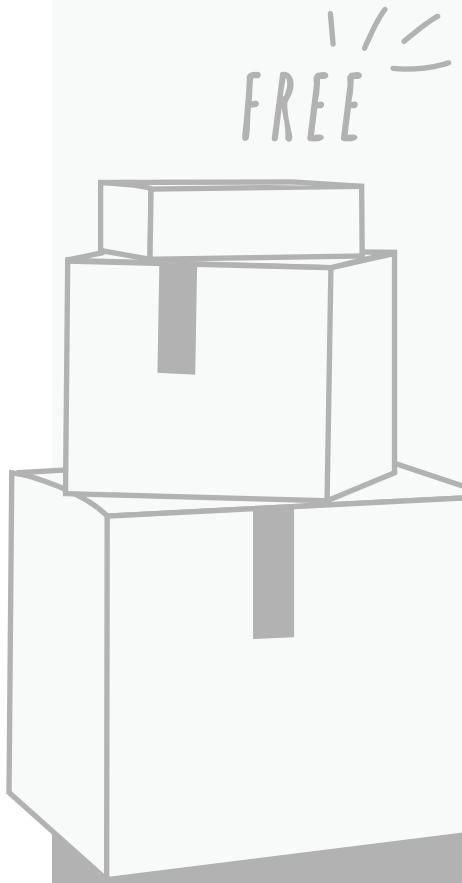
In addition to these various challenges, there are also the specificities of each client's distribution networks which can vary over time: e-commerce, B2C, B2B, third-party distributor networks, etc.

To address the variability of these order types, it is essential to rely on a solution adapted to a volatile environment where forecasting movements and seasonality within an omnichannel commerce scenario proves to be complex. While in the past, this uncertainty might have led logisticians to avoid mechanizing their operations for fear of rigidifying their supply chain, the flexibility brought about by robotization enables the adjustment of resources to cope with the fluctuations in business activity.



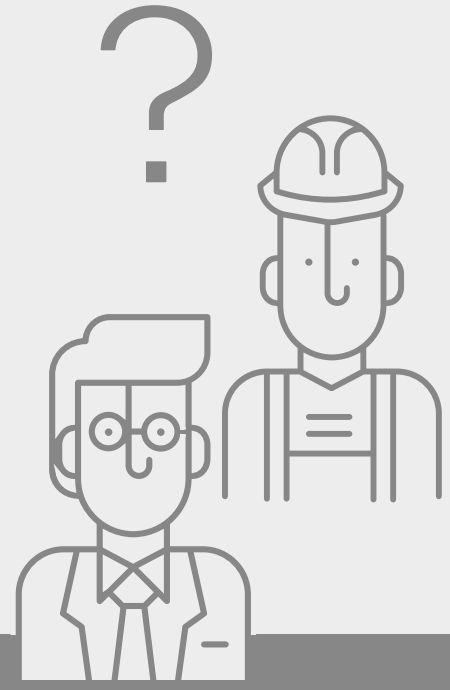
KEY FIGURES

INTRA-LOGISTICS



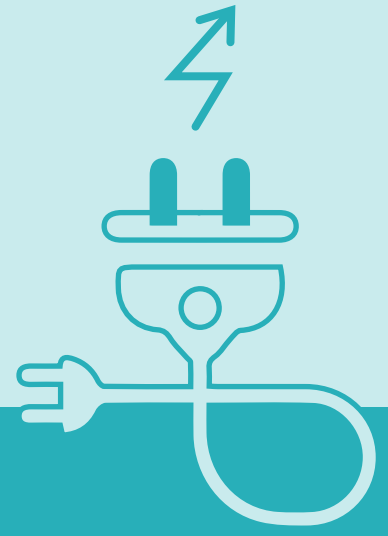
69%

of consumers consider free shipping as a purchasing incentive



73%

of intralogistics employers consider labor shortages as a risk for the survival of their business



84%

An average increase of 84% in electricity prices in Europe in 2023

02

Automation, mechanization, and robotization:

In order to better grasp the technological advancements in today's warehouses, it is essential to understand the nuances between automation, mechanization, and robotization.

WE NEED TO TALK!

Often, these terms are used interchangeably, but in reality, mechanization and robotization are two levels of intensity within automation, which is a broader concept encompassing both.

1. Automation, mechanization, and robotization... Differences in levels

Automation, in the broadest sense of the word, can be simply defined as the use of techniques aimed at replacing or facilitating tasks traditionally performed by humans (whether in craftsmanship, industry, or other activities, even non-economic ones). Warehouses worldwide are not exempt from this process, which pursues two objectives: enhancing performance and reducing hardship for human operators in these facilities.

2. Mechanization or "traditional" automation, focused on the machine's physical functions

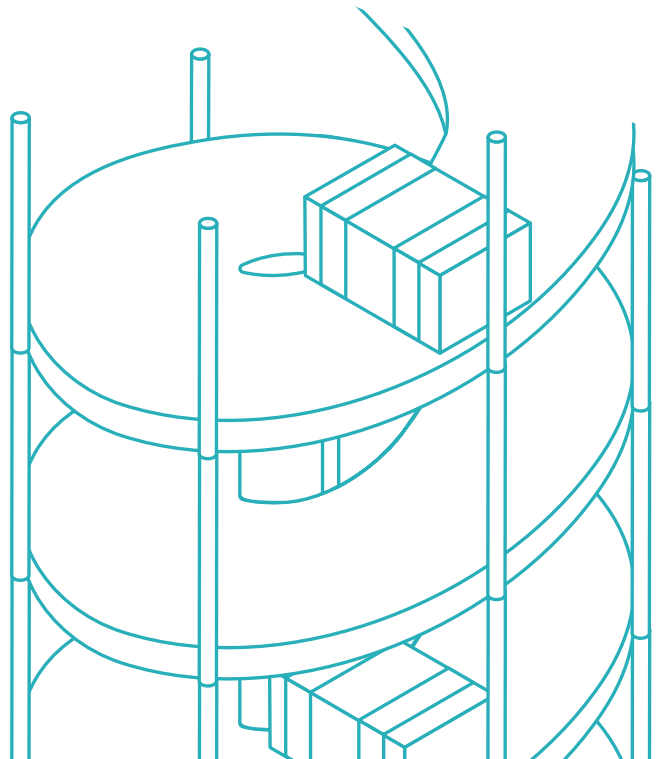
Mechanization, historically the first to emerge, consists in delegating to machines all or part of the physical tasks previously performed by humans. It began during the first industrial revolution in Europe, with examples such as John Kay's flying shuttles for fabric production, which replaced the harsh conditions under which women and children worked. Another example is the widespread use of the steam engine in all the industrial processes of that time. In this case, the machine is programmed to perform continuous movement or fulfill a specific function, closely determined by human intervention. In the field of intralogistics, mechanization can be found, for example, in the use of pallet trucks for lifting heavy loads or conveyors for transporting storage units throughout the warehouse.

3. Robotization: strength (always) and intellect (in addition)

Robotization goes further by replacing or assisting humans not only in their physical tasks but also in certain intellectual functions that were once reserved for them. Robots integrate mechanical as well as electronic elements, software programming, and artificial intelligence, enabling them to perceive their environment and take decisions based on the data they receive.

4. Clarifying confusion

Initially, it seemed important to clarify this terminology and distinguish traditional automation, which relies on the mechanization of human-origin physical activities, from robotization, which combines the physical performance of the machine with artificial intellectual functions, to varying degrees of advancement.



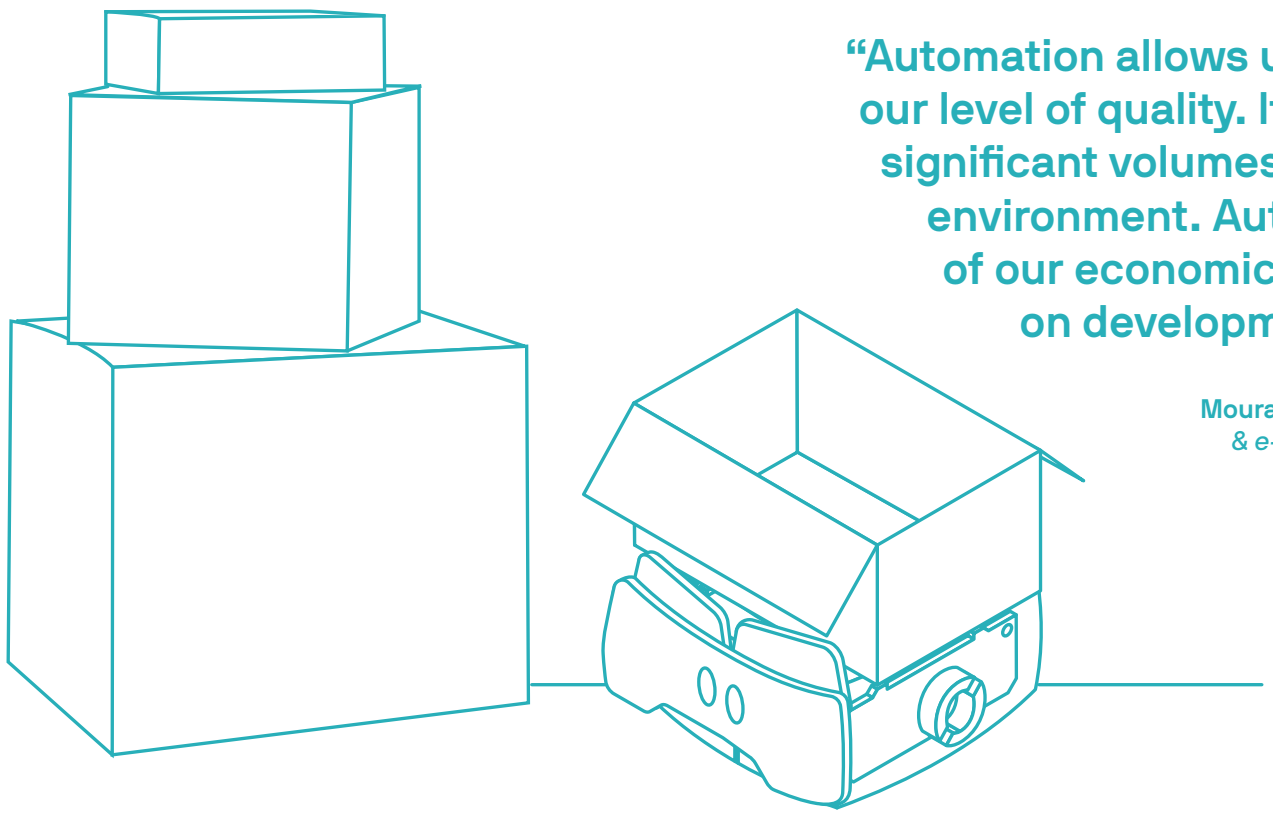
"A robot is not quite a machine. A robot is a machine made to imitate as closely as possible the human being."

Isaac Asimov,
Biochemist and writer

5. In warehouses, between choice and balance

In warehouses, supply chain professionals are often faced with a choice between these two types of automation. They can opt for a simple mechanization of their warehouse to assist or replace operators in their physical tasks or choose a more advanced robotization of their intralogistics processes. It is also possible to strike a balance between the two by using a combination of mechanization and robotization.

In conclusion, understanding the differences between automation, mechanization, and robotization is essential to take informed decisions in the field of intralogistics and find the right balance between the advantages offered by these technological advancements.

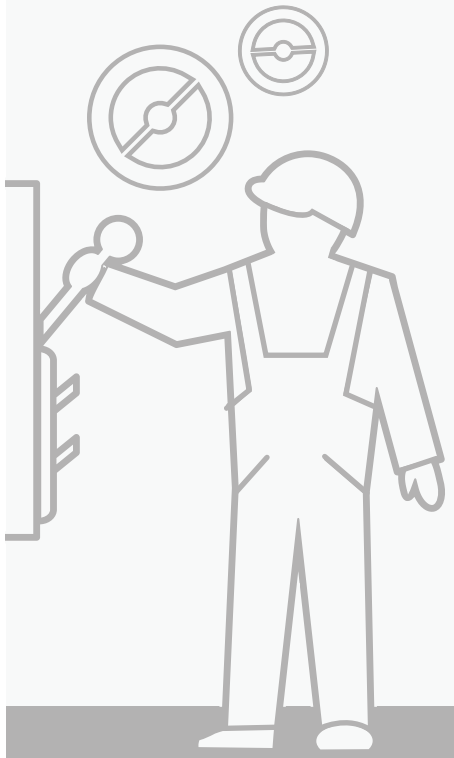


“Automation allows us to secure our production capabilities and our level of quality. It is also a tool for conquest: we can absorb significant volumes without modifying the initial mechanized environment. Automation ensures a finer understanding of our economic equation. Lastly, it enables us to work on development prospects over several years.”

Mourad Bensadik, *Director of e-commerce France & e-commerce group operations at Carrefour*

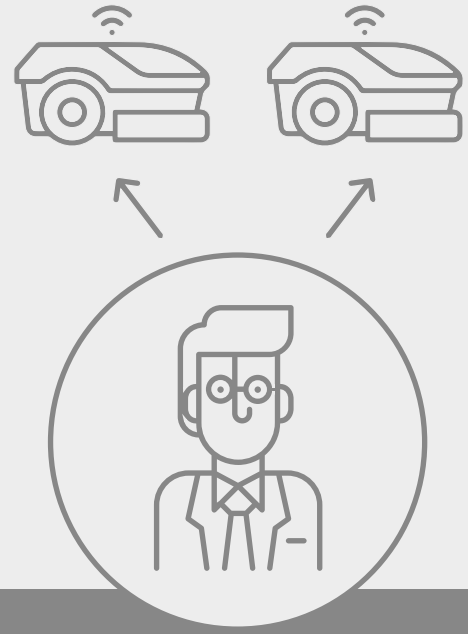
DEFINITIONS

INTRA-LOGISTICS



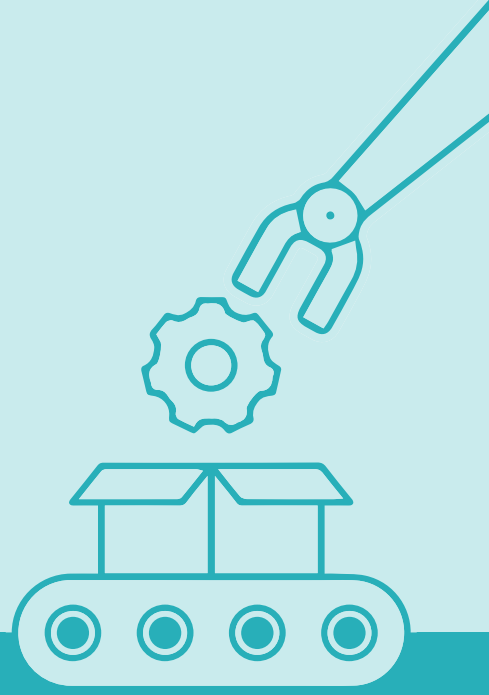
Automation:

The use of techniques aimed at replacing or facilitating tasks traditionally carried out by human beings.



Mechanization:

Delegating to machines all or part of the physical tasks previously performed by humans.



Robotization:

Replacement or assistance of humans not only in their physical tasks but also in certain intellectual functions.

03

From automation to robotization in intralogistics:

A STORY OF NATURAL EVOLUTION

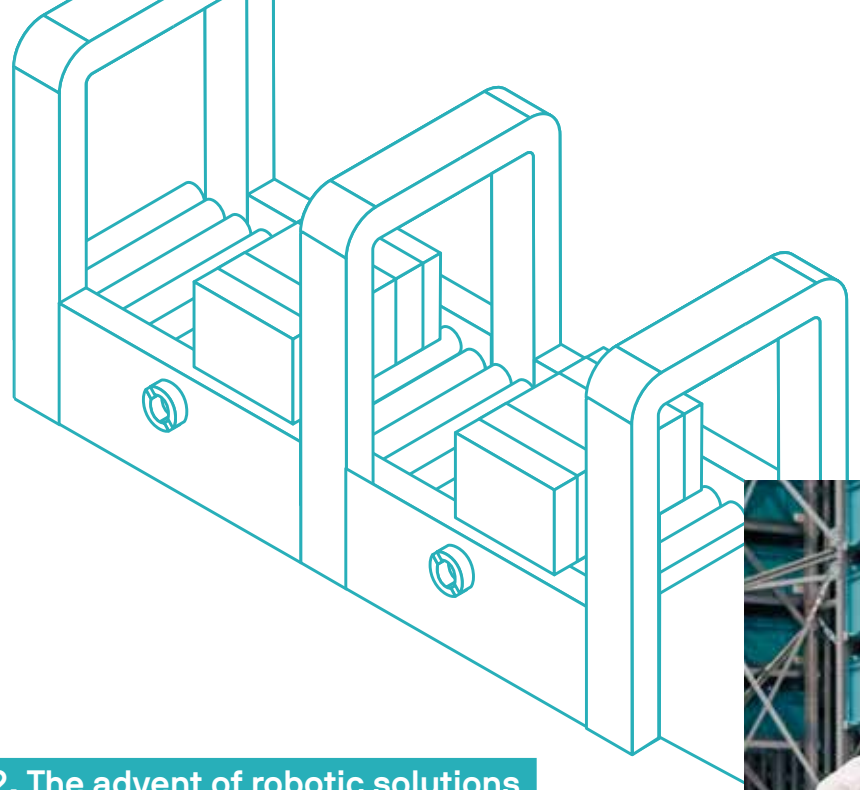
1. Automation, proven solutions but ill-suited for modern intralogistics challenges

Automation has proven its worth in various sectors, including intralogistics. Technologies that are now well-established, such as automated conveyor systems, shuttles, miniloads, and the advent of warehouse management software, have significantly optimized the performance of intralogistics operations. They have also improved the efficiency of goods flows while fighting against an increasingly worsening shortage of labor.

However, **these traditional automated solutions may have certain limits when it comes to addressing the specific challenges of modern intralogistics.** Today's warehouses face issues such as real-time inventory management, order customization, reducing delivery times, and quickly adapting to demand fluctuations.

Moreover, conventional automated systems are often rigid and require complex planning and configuration to adapt to changes. They can be costly to implement and maintain, thus making their adoption less accessible for small and medium-sized companies.

Lastly, traditional automated solutions primarily focus on physical tasks, leaving little room for flexibility and autonomous decision-making by the systems. In an intralogistics environment that is constantly evolving, it becomes essential to combine automation with more advanced competences to meet the increasing demands.



2. The advent of robotic solutions in warehouses

In response to these challenges, robotic solutions have emerged as a promising alternative in the field of intralogistics. Collaborative robots and other Automated storage and retrieval systems (goods-to-person, goods-to-man...) are designed to work alongside human operators, combining the advantages of automation and human intelligence.

These robots can perform a variety of tasks, ranging from moving goods to managing inventory, and handling order preparation. **Thanks to their ability to adapt to changes and their flexibility, they can be used to address fluctuations in demand, product variations, and customization needs in orders.**

Moreover, these robotic systems, provided they are equipped with modern and evolving software technologies - potentially using machine learning - can analyze and interpret data in real-time. This enables them to take autonomous decisions and optimize intralogistics processes. They can also be equipped with advanced sensors to navigate autonomously within the warehouse and interact securely with workers.

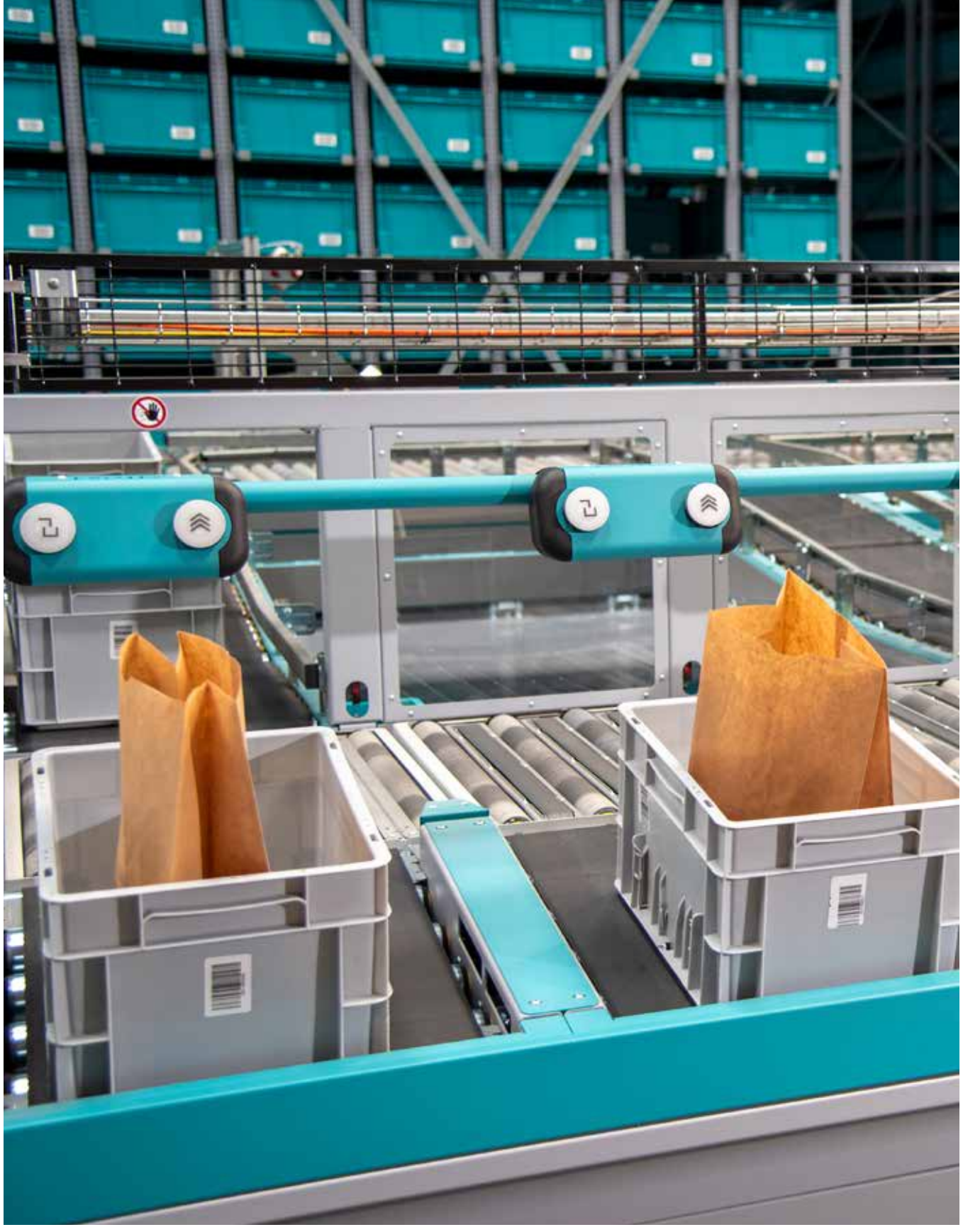
"Before Exotec® invented the Skypod® system, the traditional automation system did not meet our need for agility."

Pierre-Yves Escarpit,
Deputy General Manager, Cdiscount

The benefits of robotic solutions go beyond operational efficiency. They also enhance working conditions by reducing physical strain for operators and eliminating repetitive and monotonous tasks.

However, the adoption of robotic solutions also raises questions and challenges. The training of workers for the use of and collaboration with robots is essential to ensure a smooth transition and requires increasingly technical expertise. Additionally, it is crucial to establish appropriate policies and regulations to ensure safety, data protection, and an ethical use of robots in intralogistics. And as is always the case in automation, whether it be traditional or robotic, questions regarding system maintenance and integration with third-party solutions remain crucial to enable these new solutions to fully perform their role over time.

As a conclusion, **traditional automation has brought significant improvements in the field of intralogistics, but modern challenges require more flexible and intelligent solutions.** Robotic solutions offer a promising alternative, combining the advantages of automation with adaptability, autonomous decision-making, and collaboration with operators. However, their adoption requires adequate planning, training, and a particular attention when integrating with software or hardware solutions from other providers.



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Market overview of intralogistics automation:

STATE OF PLAY AND AVAILABLE SOLUTIONS

1. France leading the way in industrial robotics

According to the annual study conducted by EVOLIS, a professional organization representing French manufacturers of machinery and industrial equipment, the French market for industrial robotics experienced another positive year in 2022, demonstrating the interest of industries - across all sectors - in these new technologies:

- The sector witnessed a growth of +15.3% compared to 2021.
- The demand from the automotive industry, the primary customer of the sector, rebounded after two consecutive years of decline.
- Ongoing efforts to modernize the machinery and industrial equipment sector were confirmed in 2022, showing positive effects on the overall demand for industrial robots.
- A significant increase in robotic welding operations was observed in industrial applications.
- France ranks 8th globally and 3rd in Europe in terms of robots sold in 2022.
- Despite an uncertain economic context, industry leaders maintain moderately optimistic growth forecasts for the sector.
- The International Federation of Robotics anticipates a 6% annual increase in the installed base of robots in France by 2025.

2. Warehouse robotics worldwide

According to a study by Gartner, **by 2028, 50% of large international companies will adopt some form of intelligent robots in their warehouses or manufacturing operations.** The study forecasts exponential growth in the warehouse robotics market over the next decade and reveals insightful findings about the motivations and behaviors of logistics players in this field:

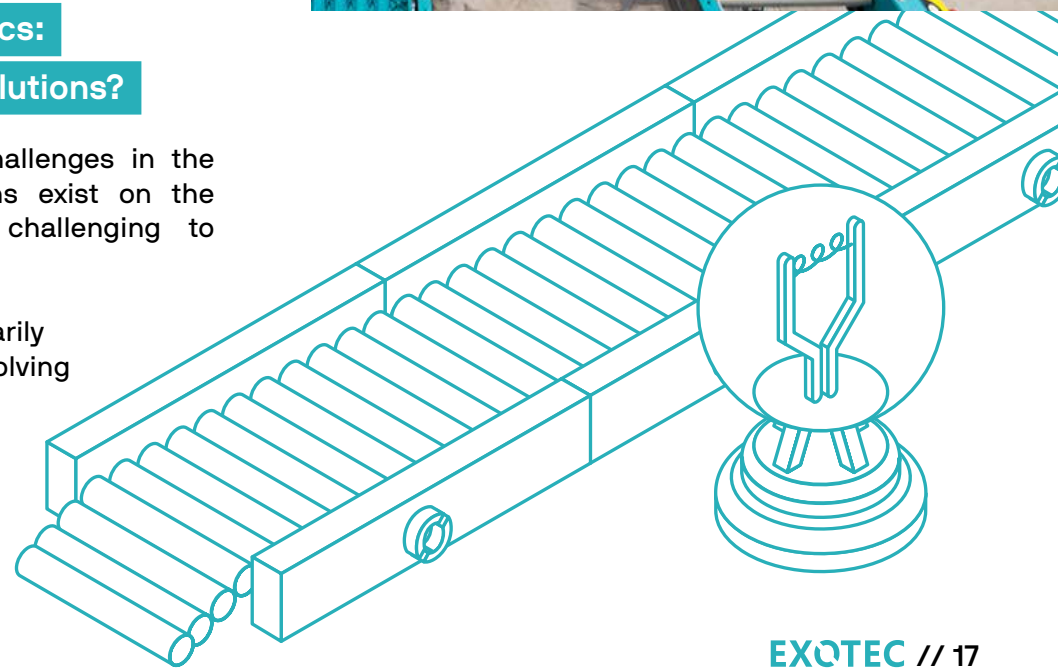
- Among the respondents, 30% indicated that labor and talent issues were one of their top two internal challenges, and 59% stated that labor availability issues were driving them to consider automation.
- Regarding robots, 96% stated that they are investing or planning to invest in robots over the next two years, with 36% currently deploying (29%) or having fully deployed (7%) them.
- Furthermore, 93% of current robot users expressed an intention to increase the size of their existing robot fleet, and 94% stated they seek to use robots in their operations more.
- Due to this rapid growth, the study also estimates that 40% of the large international companies will have heterogeneous fleets of intralogistics robots in their operations within the next five years.

Companies deploying heterogeneous fleets of robots from different suppliers and performing various tasks will need to use standardized software capable of easily unifying a variety of robotic agents and platforms. Experts refer to this as “multi-agent orchestration platforms,” capable of assigning tasks to appropriate robots based on near-real-time information that considers the activity characteristics and capabilities of different automation agents.

3. Automation in intralogistics: what are the available solutions?

Today, to address the various challenges in the supply chain, numerous solutions exist on the market, making it sometimes challenging to navigate between them:

- Simple traditional solutions, primarily based on conveying elements involving station-based picking and parcel conveying.



- More sophisticated tools that include miniloads, stacker cranes, and integrate pallet storage.
- Lightweight solutions for picking assistance. Here, robots assist warehouse workers to avoid manual handling of loads, thus providing more agility to the preparation process.
- Mobile shelving solutions, the initial step in warehouse robotics. These shelving units reduce movements while achieving a certain level of productivity. However, their height limit of 1.80 meters might not meet the needs for warehouse densification but is adapted to those with limited ceiling heights.
- Solutions enabling maximum storage densification through robots capable of retrieving and delivering products to the user.
- More traditional solutions for densifying storage with very high production levels (5,000 to 10,000 preparation lines per hour) positioned in large installations using shuttle conveyors and sorting stations.

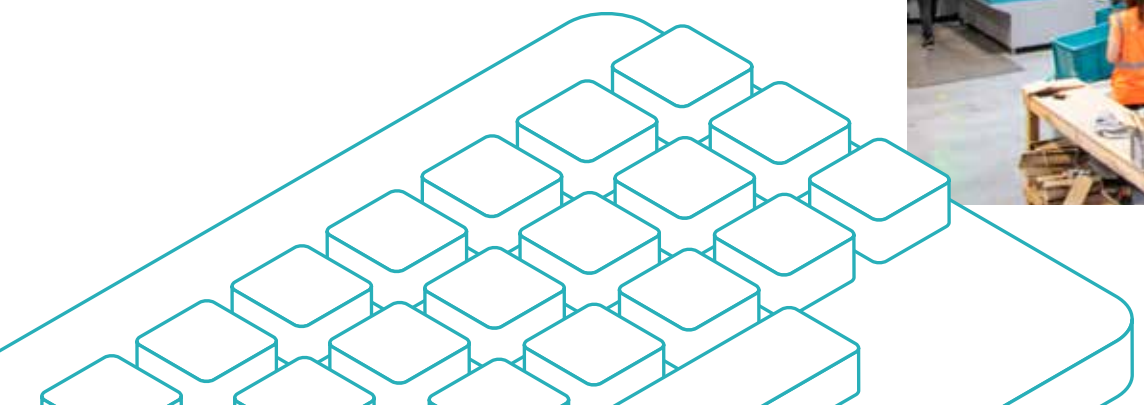
4. What makes Exotec different?

More than systems, our clients buy performance

Primarily, Exotec® is **committed to offering results to its clients**. When a client purchases a solution from us, they also obtain a contractual commitment regarding the system's performance and availability. Because although we have a fundamentally product-oriented approach, we nonetheless consider warehouse robotics as a service. The latter provides the possibility for clients to rent robots to cope with peaks in activity, to expand existing systems without disrupting operations, or even to integrate specific machinery, all orchestrated by our warehouse software. This performance commitment encompasses the entirety of the client's needs in their maintenance contract: comprehensive maintenance, whether preventive (wheel or battery replacement, etc.) or otherwise, spare parts warranty, and software updates. Clients benefit from our continuous improvements, whether they're technological, mechanical, or software-related.

"The solution offered by Exotec® is perfectly aligned with our approach of an industry 4.0. It is easy to install and can evolve to meet our future needs."

Benjamin Gauchenot,
VP Operations and Quality at Lacroix Electronics



Easy to deploy. Easy to maintain. Easy to develop.

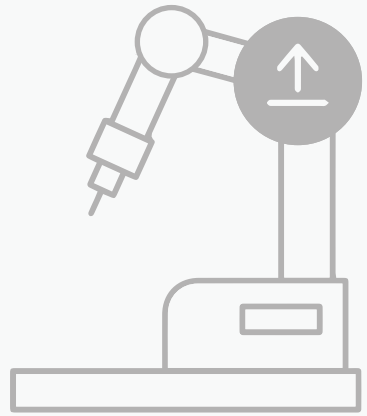
The standardization of our solutions stands out as a key element in our differentiation on the market. Traditional mechanization, often based on tailored solutions, frequently leads to more expensive installations, longer to deploy and stabilize, and with limited scalability over time. That's why we have chosen the opposite approach: identical robots regardless of the client and their activity: whether it's Carrefour in Paris, Gap in the USA, or Uniqlo in Japan!
This principle extends not only to robots but to our entire range of products (preparation stations, conveyors, picking robots, Order Movers, etc.). All of this follows a plug-and-play logic taken to its extreme.

KEY FIGURES

THE USE OF ROBOTICS IN LARGE COMPANIES

50%

of large companies will adopt some form of smart robots by 2028

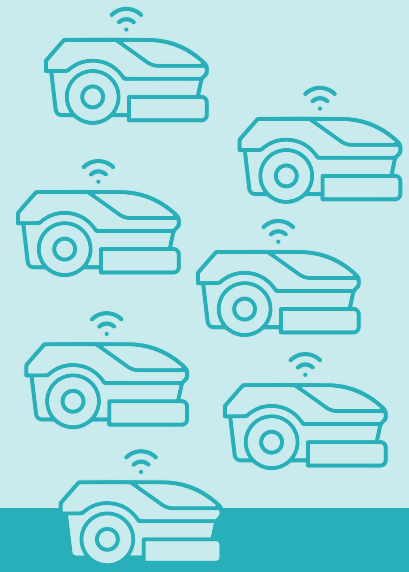


59%

of large companies consider labor availability issues as driving factors for considering automation

96%

have stated they are investing or planning to invest in robots over the next two years



93%

of current robot users have stated their intention to increase the size of their existing robot fleet

05

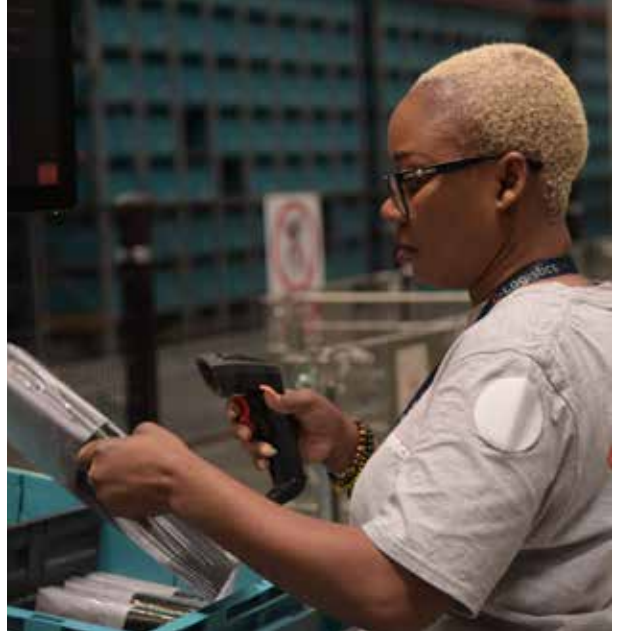
In recent years, some strong trends have emerged in the sector. Previously considered as “nice to have”, these elements are now appearing as real strategic axes for development - and even survival - for businesses.

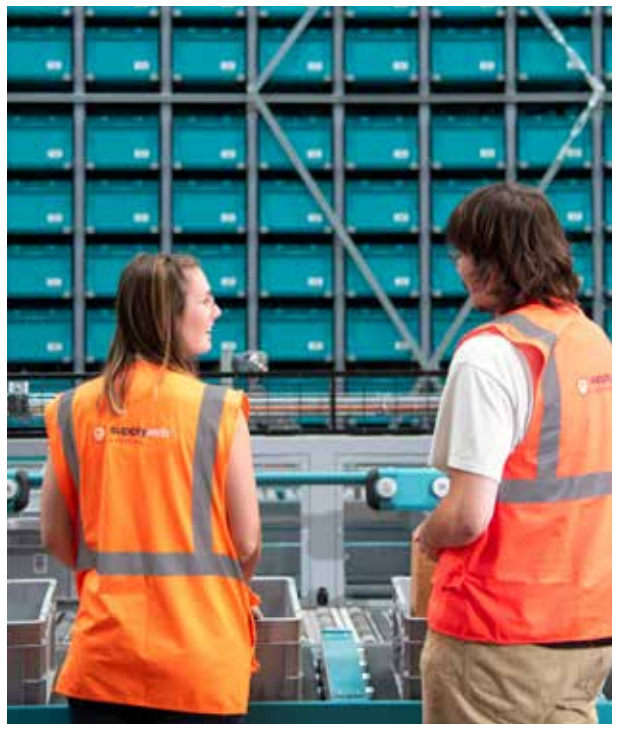
Preparing the future of warehouse robotics

After reviewing these challenges, we will provide some insights into how we are addressing them. Our R&D resources stand as a force. Nearly 15% of our turnover is directly redirected toward the improvement of our products and services, most of which are directly applicable to the systems already in place, benefiting not only our future but also current clients.

1. What will tomorrow be made of (in warehouses)?

- **An increasingly structured supply chain:** the supply chain is evolving within an ecosystem that encompasses a network of warehouses and carriers, starting from the factory all the way to the final customer. While shippers previously relied on large European platforms for their operations, there is now a growing preference for smaller warehouses located closer to the final customer. This trend not only reduces environmental impact by minimizing delivery distances but also reflects a shift in urban areas. However, in city centers, where public authorities aim to rebuild and reintegrate economic activities, the focus isn't on waiting for spaces comparable to those in peri-urban logistics zones to be available. The logic here is rather to go for smaller logistic units, and if these units incorporate robotic systems, the latter need to be highly dense with storage capable of utilizing the entire warehouse height to maximize space. The density of our systems, with racks capable of reaching up to 12 meters in height, has always been part of our philosophy. In our continuous improvement mindset, our teams persistently strive to design and arrange racks that optimize warehouse volume consumption always more.





- **Reduced energy consumption:** besides limiting soil urbanization, reducing energy consumption has become a priority for all, including supply chain players, for both economic and environmental reasons. In comparison to heavier forms of automation like Shuttles and Miniloads, our Skypod robots consume less energy while delivering similar performance. By adjusting the pace of work of the robots based on the intensity of needs in the warehouse, average energy consumption naturally decreases. We also work on a global scale to decrease the carbon and environmental footprint of warehouses, for instance, by providing storage bins made up entirely from plastic recycled in Europe.

- **Rethinking packaging:** while the sector traditionally used a single container to package products, the approach has significantly changed in recent years and continues to evolve. Some tools enable to calculate the product's size to create the appropriate packaging. Simultaneously, e-commerce businesses are also able to utilize an extensive range of packaging sizes tailored to their products, thus avoiding empty spaces within parcels. These changes lead to optimizing truck loading, further contributing to reducing the environmental footprint. However, finding the ideal packaging for an item requires substantial data on its product database. And at Exotec, one of our goals is to work on automating the acquisition of the article database.

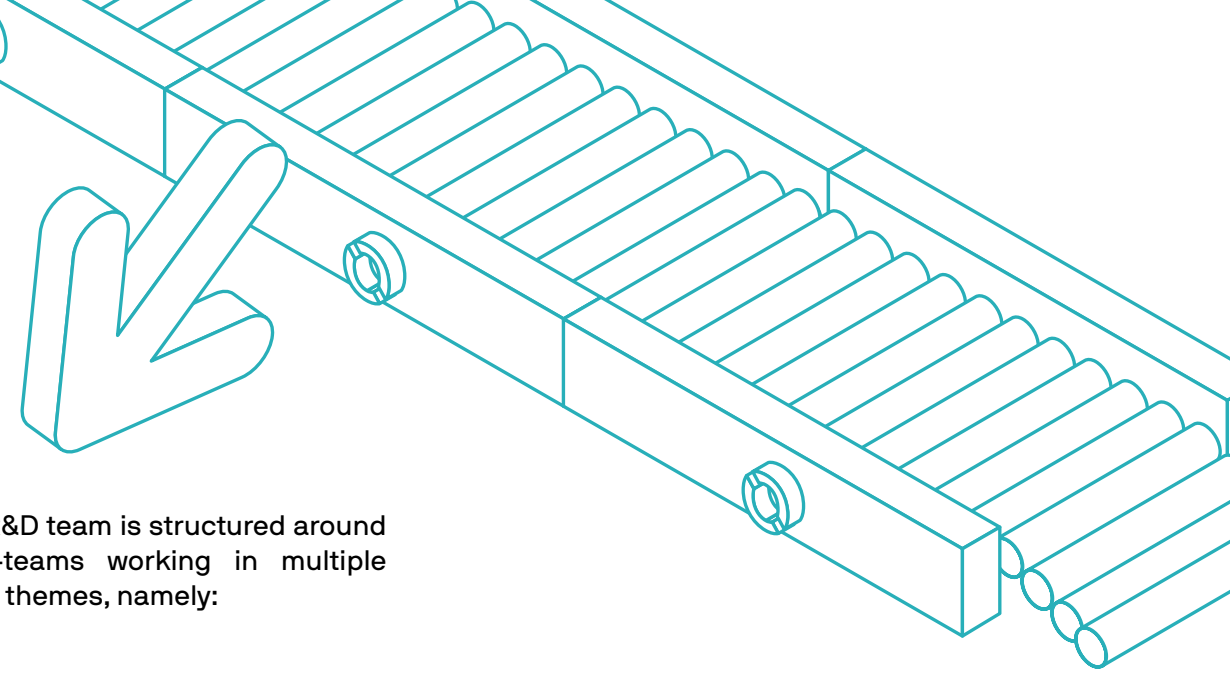
- **Growing interconnectivity:** the supply chain is integrating end-to-end solutions that interconnect from forecasting to executing transportation operations, including warehouse management. To facilitate the connectivity of these intelligent systems, Application Programming Interfaces (APIs) are being implemented. These software interfaces enable the connection and communication between various digital tools.

Upon the installation of our Skypod robots, thanks to standardized APIs, Exotec can therefore implement all the necessary tools for an efficient and intelligent logistics strategy: an automated system, a WCS, a WMS.

- **Managing uncertainty:** with inflation impacting the purchasing power or altering consumption patterns and increasingly unpredictable sales peaks, it's challenging to foresee the future and prepare warehouses for all scenarios. The only viable approach is therefore to enhance warehouse resilience with systems capable of adapting to needs that now evolve almost daily. Adjusting throughput positively or negatively, renting additional robots, seamlessly expanding storage without interrupting ongoing operations... These criteria must all be considered when choosing a provider for robotic solutions.

2. R&D: making a difference in customer service

To address the challenges impacting and that will impact the supply chain in the future, the role of Research and Development (R&D) is crucial as it drives innovation. Engaging with the needs of its clients and stakeholders, Exotec sets a goal: to translate its clients' ideas and innovations into practical and sustainable products that perform effectively.
Our current ambition is to maintain the same ratio between our investments in R&D and our overall revenue to continue our development. This acceleration aims to achieve complete warehouse automation while consistently enhancing our existing product range.



Our R&D team

On a daily basis, our R&D team is structured around several project sub-teams working in multiple disciplines on specific themes, namely:

- **Software**
- **Machine Learning**
- **Hardware / Mechanization**
- **Hardware / Electrical**
- **Network**
- **Systems**

This R&D team currently comprises 130 individuals, a number expected to grow in the future.

Our R&D roadmap

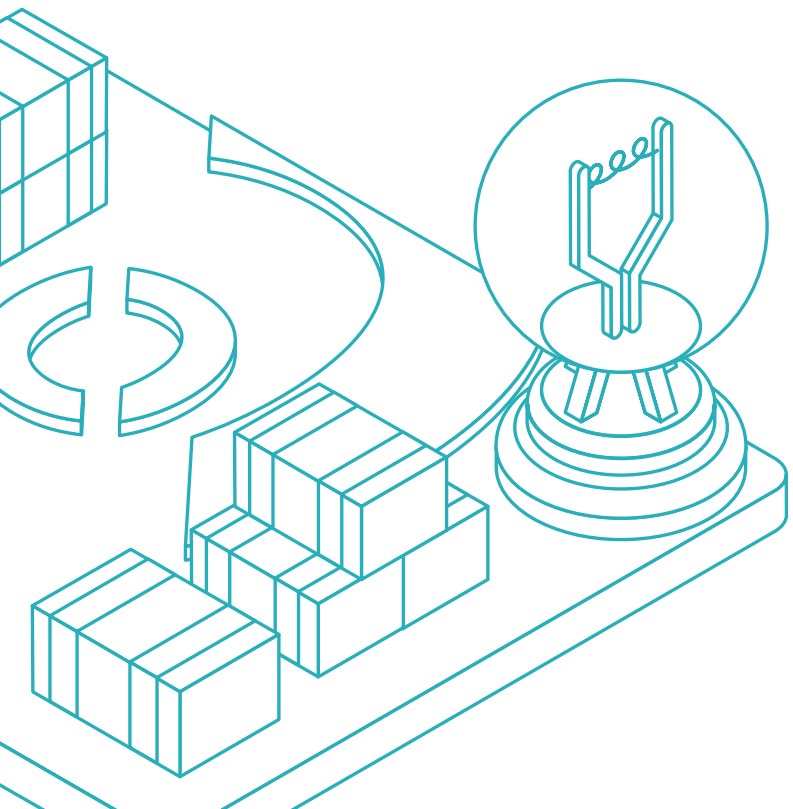
In terms of focus areas, our research teams are currently focused on three fundamental aspects to enhance our solutions:

- Continuing our efforts to improve the performance of our robots, aiming to increase the number of order preparation lines executed per hour with our systems.
- Expanding the number of robots capable of operating within a Skypod® system.
- Enhancing the environmental efficiency of our solutions, a concerted effort carried out with our various suppliers (energy savings, use of recycled plastics, storage densification, etc.).

Furthermore, our ambition is to maintain significant investments in R&D, as we have always done, allocating more than 15% of our annual turnover, a rate much higher than the industry average (which typically ranges between 2% to 4%)

And continuously enhancing the focus on “products” focus

With approximately 130 employees in the production sector (industrialization, purchasing, assembly, shipping), Exotec plans to welcome 500 engineers to bolster our team in France over the next three years. These talents will facilitate the development of new solutions across various domains: robotics, truck unloading, article stocking, picking, packaging... They will also contribute to furthering intelligence to synchronize all these new solutions. In a now conventional approach - for us - of standardization of solutions and pursuit of continuous improvement for the benefit all our clients.

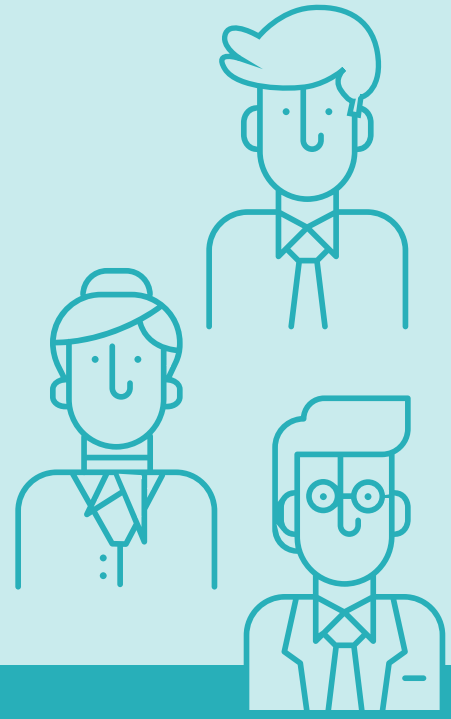


KEY FIGURES

EXOTEC'S COMMITMENT TO R&D

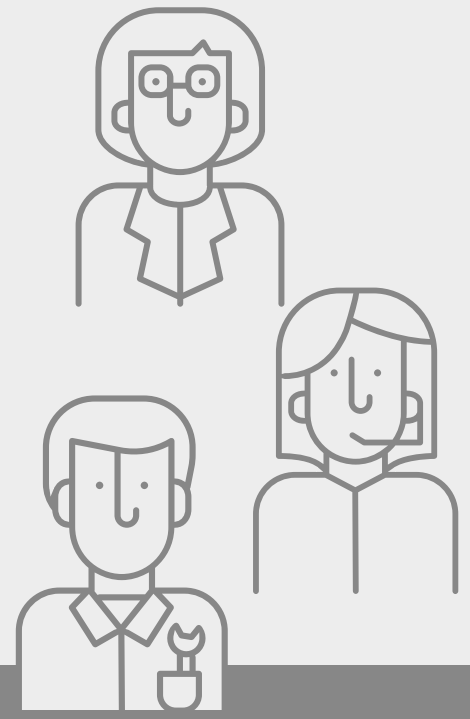
15%

of our turnover is directly allocated to improving our products and services



130

employees within our R&D team (16% of our workforce) are focused on enhancing our products and services directly from our revenue



130

employees on the "production" axis (industrialization, procurement, assembly, expedition)

06

Exotec in brief

Our aim is to bring smarter distribution, simplified order processing, and robust supply chains to our clients through the development of our robotic systems.

To achieve this, our united and continually growing team operates from four offices: in Lille, France; Atlanta, USA; Munich, Germany; and Tokyo, Japan.

Our central idea is that our clients' success is our success. Hence, our primary objective is to understand their needs thoroughly, offering tailor-made solutions and creating profitable opportunities for them in the years ahead.

To do so, we rely on strong R&D, diverse talents from all backgrounds, and products that currently stand as a source of our pride.

07

Our products

Skypod Robots

The Skypod® robots we employ are designed to operate within a closed environment, devoid of any human presence. This approach helps to minimize the risks associated with pedestrian traffic within the warehouse and significantly enhances productivity on-site.
With our adaptable system, you can easily add or remove robots within minutes to accommodate fluctuations in your operations, ensuring a consistent flow without interruptions.

Ergonomic stations

The Exotec stations are designed to facilitate order picking and improve working conditions for operators.
They are suitable for small systems without conveyors or limited space. Equipped with ramps, screens, and scanners, these stations enable operators to pick easily and ergonomically, handling up to 400 lines per hour. Accessories like Pick-to-Light and scanners enhance picking accuracy. Stations with Order Movers are suitable for larger conveyor systems, allowing operators to prepare up to four orders simultaneously.
The intelligent assistance system, Put-to-Light, guides operators to place items into the preparation bins, while the Bin Interface automates bin entry and exit. These solutions ensure a smooth and efficient flow in the order fulfillment process.

Skypath, our conveyor plug & play system

Skypath® is a plug-and-play conveyor system that is easy to configure, deploy, and operate. It consists of modules comprising straight roller conveyors, corner units, and inclined belt conveyors, all catering to the needs of a warehouse. Its deployment is rapid, avoiding complex hardware integration and causing minimal interference with ongoing operations. Skypath comes pre-wired and doesn't require an on-site automate programming. It offers swift installation and can achieve high throughput with remote assistance and diagnostics to minimize downtime. The system is modular and can be easily adjusted to meet our clients' evolving needs.

80%

of its revenue through exports

Storage: racks and bins

Our racks maximize the storage space within your warehouse with a modular design adaptable to different sizes. At a height of 12 meters, they offer up to five times more storage density than non-automated solutions. Quick deployment is possible, and additional racks can be added without interruption. They also comply with FM Global automatic sprinkler regulations. Our recycled plastic bins can store various references, and are available in heights of 220mm, 320mm, and 420mm. They can be divided into compartments to increase storage density. Removable plastic dividers allow the bins to be divided into 2, 3, 4, 6, or 8 compartments, making it easier to group items frequently ordered together, thus enhancing overall efficiency.

Deepsky, our warehouse software

Deepsky® is an automated warehouse management software that coordinates and optimizes operations within the Skypod® system and other third-party equipment. It seamlessly integrates with other warehouse management systems, ensuring continuous control, performance optimization, and preventing failures. It automatically gathers system data, provides immediate and complete visibility, and processes orders right from its installation.

Recent developments

Great Britain, Germany, Benelux, Japan, USA...
Exotec currently generates 80% of its revenue through exports and aims to have a strong presence and coverage in all territories worldwide.
This is illustrated by our operations in the USA, where we have over 70 employees as of early 2023, following the establishment of a branch in Atlanta in 2022. To ensure we have a skilled workforce and organize knowledge management, we have recently established our own university.

Exotec Offices

● Integration Partner

The support of integrators

Our international strategy is also reflected indirectly through integrators of our Skypod® system. Exotec selects integrators with sales and maintenance teams in countries where the company is not yet established. These partnerships represent a true win-win relationship: we provide them with technologies they do not have access to, and they enable us to address major clients on an international scale.

CONCLUSION

Warehouse robotics is not the sole solution, but for us, it is a highly relevant answer among many others to the numerous challenges of modern intralogistics: the need to address labor shortages, the requirements for flexibility and performance, the integration of energy and environmental issues, and the establishment of more fulfilling work organizations for individuals, including within warehouses.

Exotec has chosen to tackle these challenges and be a proactive player in this intralogistics ecosystem, making it more efficient and sustainable wherever its robots operate and will operate in the future. To achieve this, our teams continue to search, develop, and enhance products and services to offer a comprehensive and scalable solution to the needs of our clients and their employees.

In this white paper, our aim was to provide a clear and insightful perspective on the current and forthcoming challenges in the intralogistics sector and the solutions that, in our opinion, will address them.