

# Investor Handbook

Version 7.0 – August 2024

**kardex**

More detailed information:



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# Executive Summary

## 1. Kardex in brief

Kardex is a leading global partner for intralogistics solutions in an attractive and growing market. The Group offers premium automated products, standardized systems and lifecycle services that guarantee high availability and low total cost of ownership. Kardex provides an intelligent entry into automation with its dynamic storage and retrieval systems, offers integrated material handling systems, small parts storage systems and automated high-bay warehouses and acts as a global AutoStore partner, offering flexible and modular storage and order fulfillment solutions.

Kardex has four manufacturing facilities and around 2'500 employees in over 30 countries worldwide. Kardex Holding AG has been listed on the SIX Swiss Exchange since 1989.

## 2. Intralogistics market and key trends

Storage and material handling is a key cost and efficiency factor, not only in traditional production and distribution facilities but increasingly also for service providers and for e-commerce business models. Many of these companies have to invest in modernizing their storage and warehouse facilities in the coming years. Companies with a manufacturing or distribution basis in high cost countries in Central Europe have been the main drivers of the automation trend. The rest of Europe, North America and increasingly also Asia/Pacific and South America are following this trend.

Global trends are causing a change in global economy. These trends relate to core technologies as well as the way how B2B and B2C transactions are handled. Most of these trends will therefore either directly or indirectly also have an impact on the intralogistics solution providers and their customers. The biggest impact will be in the transactions and ways of interaction with customers and the total information handling, which are directly related to the ever more globalized and digitalized business world. For instance the increase in e-commerce and the resulting delivery/return logistics demand more decentralized, smaller warehouses and "last mile" solutions. Furthermore, increasing labor shortages, companies reshoring/nearshoring their operations to be closer to end markets, or ergonomic design to meet demographic changes require more flexible and efficient automated intralogistics solutions. In addition, more companies have identified sustainability as a strategic focus area or need to comply with ESG standards, and automated intralogistics can significantly reduce floor space requirements and energy consumption by reducing the need for heating or lighting.

### 3. Strategic growth drivers for Kardex

Kardex has defined three strategic drivers to exploit further growth and profit opportunities:

- Leverage existing customer base
- Focus on target customers and industry segments
- Geographical expansion

Kardex will leverage its strong position and large installed base in the current markets to generate additional sales with existing customers through an extended solution and service offering. In addition, to further expand its revenue streams, Kardex will continue to develop existing and new industry segments with its existing automated products and standardized systems as well as targeting new customers on their journey to start automating their intralogistics. The main geographic growth will be based on an increased market penetration in regions such as North America and Asia.

### 4. Differentiating factors

#### **Strong market position**

Kardex Remstar is a global market leader for dynamic storage, retrieval and material handling solutions. Kardex Mlog has a leading position in Central Europe for stacker cranes, conveyor systems and automated material handling systems. Kardex AS Solutions acts as a global AutoStore partner, offering its leading flexible and modular storage and order fulfilment solutions.

#### **Large installed base and strong service network**

With over 140'000 installed Kardex Remstar machines and over 1'000T Kardex Mlog warehouse systems, the Group has a broad existing customer base that counts on first-class after-sales services. Furthermore, many of these customers must and will upgrade their systems to further increase efficiency. Kardex is well positioned to benefit from these modernization needs.

#### **Unique offering to accompany customers growth**

Through its three business units, Kardex offers a unique portfolio of products and solutions and acts as the intralogistics expert and partner to accompany customers on their journey to automation and support them as they grow and evolve. Kardex Remstar acts as an enabler for customers starting the automation of their intralogistics with an offering that is easy to implement and requires low initial investment with a quick return on investment. Kardex AS Solutions and Kardex Mlog, both offering standardized systems are the ideal partners to support the customers growth and increasing intralogistics needs, with improved warehouse organization, increased efficiency and system availability, space utilization, productivity and inventory control.

#### **Global footprint**

Kardex' global footprint not only offers a strong basis for providing sales and service worldwide and to partially mitigating the risk of local or regional downturns, but also increases the speed with which new offerings such as AutoStore can be implemented in each region and country. With a local organization already in place, the company can focus on new sales and project management teams, saving time and money.

## 5. Key financials

### Key figures

in EUR million

1.1.-31.12.	<b>2023</b>	(%)	2022	(%)	+/-%
Bookings	673.9	95.9%	698.6	123.5%	-3.5%
Order backlog (31.12.)	475.9	67.7%	510.5	90.3%	-6.8%
Net revenues	702.9	100.0%	565.6	100.0%	24.3%
Gross profit	235.9	33.6%	177.7	31.4%	32.8%
OPEX	150.0	21.3%	121.9	21.6%	23.1%
EBITDA	99.3	14.1%	65.4	11.6%	51.8%
Operating result (EBIT)	85.9	12.2%	55.8	9.9%	53.9%
Result for the period (net profit)	66.9	9.5%	38.6	6.8%	73.3%
Free cash flow	46.2		-15.2		403.9%
ROIC	37.6%		28.9%		
	<b>31.12.2023</b>	(%)	31.12.2022	(%)	+/- %
Net working capital	102.2		76.2		34.1%
Net cash	119.6		102.7		16.5%
Equity/Equity ratio	240.1	56.9%	204.6	56.2%	17.4%
Employees (FTE)	2'397		2'097		14.3%
	<b>2023</b>	(%)	2022	(%)	+/-%
Distribution per share (CHF)	5.00		3.50		42.9%

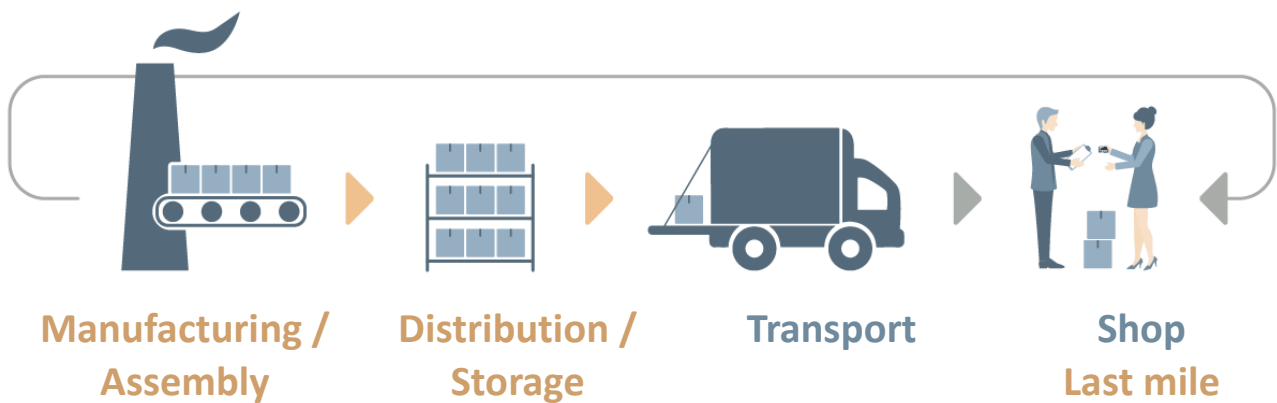
01.01. - 30.06.	2024	(%)	2023	(%)	(+/-%)
Bookings	382.8	103.5%	339.1	101.4%	12.9%
Order backlog (30.06.)	488.3	132.1%	510.0	152.5%	-4.3%
Net revenues	369.7	100.0%	334.5	100.0%	10.5%
Gross profit	127.3	34.4%	110.9	33.2%	14.8%
OPEX	79.1	21.4%	67.8	20.3%	16.7%
EBITDA	53.1	14.4%	47.6	14.2%	11.6%
Operating result (EBIT)	48.2	13.0%	43.1	12.9%	11.8%
Result for the period (net profit)	38.3	10.4%	32.4	9.7%	18.2%
Free cash flow	56.0		12.2		359.0%
ROIC	39.0%		37.5%		

	30.06.2024	(%)	30.06.2023	(%)	(+/-%)
Net working capital	84.1		97.4		-13.7%
Net cash <sup>1</sup>	137.4		86.6		58.7%
Equity/Equity ratio	240.9	54.7%	206.0	54.1%	16.9%
Employees (FTE)	2'538		2'205		15.1%

# Kardex Company Profile

## 1. Introduction

Kardex is the leading intralogistics solution provider of automated storage, retrieval and material handling systems focussing on efficient order fulfillment solutions. Intralogistics solutions cover the material logistics and handling but also the information management within manufacturing or distribution centers and aims to improve efficiency through increased performance and cost reduction. Intralogistics does not include the transportation outside the manufacturing and distribution centers. However, over the past decade the intralogistics definition has been extended to partially cover the B2C interface.



With its offering Kardex focuses on developing automated solutions that are low in complexity and risk, ensuring efficient and reliable operations for its customers. With a focus on simplicity and safety, the company strives to provide robust and user-friendly solutions tailored to the needs of various industries, including manufacturing and assembly, distribution and storage as well as retail. The commitment to innovation and quality has established Kardex as a trusted partner in the intralogistics market. The customer journey with Kardex includes all phases starting from design and conception to meet customer requirements, realization and start-up support through to a continuous life cycle management.

Kardex has three manufacturing facilities in Europe and one in the US, and has approximately 2'500 employees in over 30 countries worldwide.



## Manufacturing sites



Bellheim



Neuenstadt a. Kocher



Neuburg a. d. Kammel



West Columbia - SC

## 2. Historical evolution

Kardex' roots date back to the late 19th century, when the first "Card-Index" ("Kardex") Systems were introduced to improve office management, at that time under the company name of Remington Type-writer Company. Both in Europe and in the US, various development steps have been made in different legal entities to finally develop automated products to support office and industry intralogistics. Kardex was introduced as a company name in 1915, and was subsumed in 1927, only to be revived in 1977 with its incorporation under Swiss law.

1977	Kardex incorporated under Swiss law
1981	Kardex opens the North American operations Remstar in Westbrook, ME
1989	Kardex listed on the SIX Swiss Exchange
1996	Acquisition of Megamat GmbH, Germany a former competitor in Germany
2008	Acquisition of Kardex Systems Inc. (Marietta, OH), a former competitor in the US
2010	Acquisition of Mlog Logistics GmbH, Germany (high bay warehouses since 1968)
2011	Change accounting standards from IFRS to Swiss GAAP FER
2020	Acquisition of minority investment in Rocket Solution GmbH (Germany)
2021	Kardex becomes global partner of AutoStore
2021	Kardex becomes member of UN Global Compact
2021	Kardex opens new Remstar factory in West Columbia, South Carolina, USA

### 3. Group structure

The Kardex Group consists of three business units which are reported in two Segments: Kardex Remstar is reported as the segment "Automated Products" whereas Kardex Mlog and Kardex AS Solutions are both in the project business and therefore reported as the segment "Standardized Systems".

Kardex is led by the Board of Directors and the Group Management, which consists of the CEO and the CFO and is responsible for Kardex Ventures and the three business units Kardex Remstar, Kardex Mlog and Kardex AS Solutions.

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## Kardex Holding AG

CEO/CFO

Kardex Ventures (Rocket Solution)

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- **Automated Products**

Head of Kardex Remstar

- **Standardized Systems**

Head of Kardex Mlog

Head of Kardex AS Solutions

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### 4. Business model and group strategy

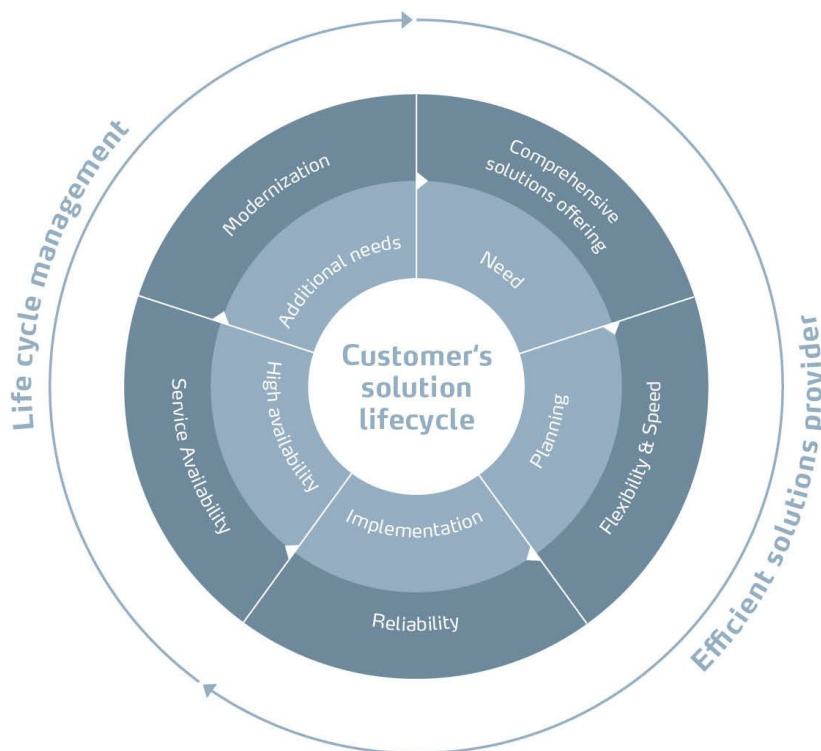
The mission of Kardex is to provide solutions and services in order to increase the efficiency in storing and handling of goods and materials on a global scale. Kardex Remstar, Kardex Mlog and Kardex AS Solutions are leading providers of solutions and services for automated storage, retrieval, and materials handling and order fulfillment. The Kardex portfolio includes products for heavy to light goods, a modern software suite solutions, integrated subsystems and life cycle services.

Based on a comprehensive product and service offering, the business units aim to serve their customers as a life-time partner for warehousing intralogistics solutions; starting from consulting to implementation through to service and life cycle management. In order to maintain and strengthen its competitive position through technological innovation and outstanding customer loyalty, Kardex is substantially investing in Research and Development, its Supply Chain, the expansion of its service organization as well as in new technology via acquisitions.

Kardex excels in providing innovative solutions that directly address emerging megatrends. The company's robust solutions portfolio is designed to accommodate investments across all economic cycles and business situations, whether it involves small-scale optimization projects or extensive strategic capacity expansions. This versatility ensures that businesses can consistently improve their efficiency and scalability, regardless of economic conditions. Kardex' ability to offer tailored solutions that enhance operational agility and productivity makes it an invaluable partner for organizations striving to stay competitive in an ever-evolving market landscape.

Kardex benefits significantly from its robust after-sales business, a key pillar that stabilizes the overall business model. As the installed base of Kardex' solutions grows over the years, so does the demand for services. This after-sales business typically generates attractive margins and enhances financial stability, making the business model more resilient and less cyclical. By focusing on comprehensive maintenance and support services, Kardex not only prolongs the life and efficiency of its existing installations, but also fosters long-term customer relationships, further strengthening its market position.

**Business Model**



### **Strategic growth directions**

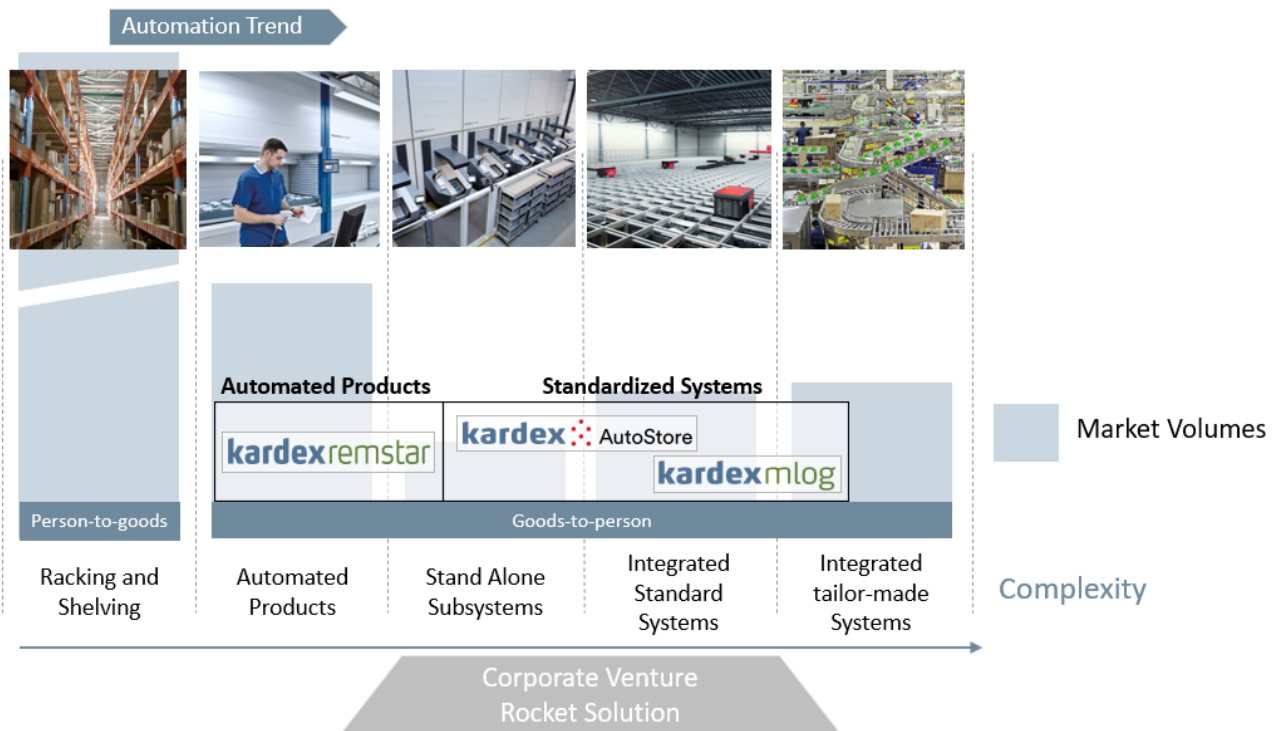
Kardex will move to a next level based on three main strategic growth directions – leverage of existing customer base with new solutions/new services, focus on target customers and industry segments and geographical expansion, and. Kardex can strategically leverage its large existing customer base to offer new solutions and services by capitalizing on its established trust and extensive industry experience. By understanding customer needs and operational challenges, Kardex can identify opportunities for its customers to automate with its portfolio of solutions. All three business units focus on organic and profitable growth and are running business development activities to further penetrate their respective markets, to identify new target countries and to define industry segments for which they will either increase the segment penetration or newly develop the segment. With a segment specific marketing each industry segment can be addressed with a tailored marketing mix. Kardex aims to grow above the industry average in the selected target industry segments and addressed markets and increase its respective market share.

The company aims to increase its presence in new regions and countries by targeting new customers directly through its own direct sales force and indirectly through a distributor network. This approach allows Kardex to penetrate new markets more quickly and cost-effectively. By establishing a local presence and partnering with distributors, Kardex can better understand and meet the specific needs of customers in different industries and regions, while benefiting from the expertise and reach of its dealer partners.

### **Intrologistic Solution Categories**

Although other solution categories are growing at a healthy pace, profitability is lower in the static Racking and Shelving market (commodities) as well as in the most complex category Integrated tailor-made Systems (due to the higher project risk levels). Thus Kardex is not active in these solution categories, respectively only to a limited extent (Kardex Mlog).

In terms of products and solutions the three business units are active in the category of Automated Products, stand-alone Subsystems and Integrated Standard Systems as shown in the following graph. With its business unit Kardex Remstar, the company is positioned in the automated products segment and acting as an enabler offering an intelligent entry into automation with its dynamic storage and retrieval systems. After this first level of automation with costs starting from €80k, Kardex accompanies its customers on their growth and automation journey, offering both stand-alone Subsystems and Integrated Standard Systems through its Kardex Mlog and Kardex AS Solutions business units. Mlog focuses on providing customized logistics solutions for heavy and lightweight applications, while Kardex AS Solutions from Autostore, with its cube-based storage system, improves space utilization and operational efficiency by enabling high-density storage and fast retrieval of goods. These projects can range from € 1mn up to €50mn, depending on the size and complexity of the projects. Together, these units enable Kardex to offer a comprehensive range of advanced intralogistics solutions tailored to the diverse needs of its global customer base. However, Kardex is not active in the Racking and Shelving segment, which is a commodity business with little or no after-sales potential, nor in the highly complex Integrated tailor-made Systems segment, as the size and risks of these projects are not covered by sufficient margin levels.



### Static Products (Racking and Shelving)

The first category of static storage systems is typically used in low-bay warehouses for storage of palletized goods or for storage of smaller goods in bins, cartons or boxes, creation of modular warehouse shelving and racking solutions. Racking and shelving systems are the most basic requirements in any distribution, storage or material handling operation and include various types of storage racks such as cantilever storage racks, portable stacking racks, conventional pallet racks, etc.

### Automated Products

This category includes automated products such as carousels (vertical and horizontal), vertical lift modules, vertical buffer modules etc. Typical solutions offered in this segment include these products combined with complementary products like bins & accessories, pick-to-light and specific software. Ergonomically designed to be user-friendly, the return of these solutions is mostly driven by reduction in labor cost and optimized space requirements.

### Stand-alone Subsystems

This category evolves from the category of automated products by combining standard technology available from the above categories with the aim of improving efficiency and quality of the solution. These solutions are mostly tailored to industry specific requirements and can be applied for many customers within the same industry segment due to their standardization. Demand for stand-alone Subsystems is steadily growing as it offers very attractive returns based on the combination of low risk and high level of standardization.

### Integrated Subsystems and Integrated tailor-made Systems

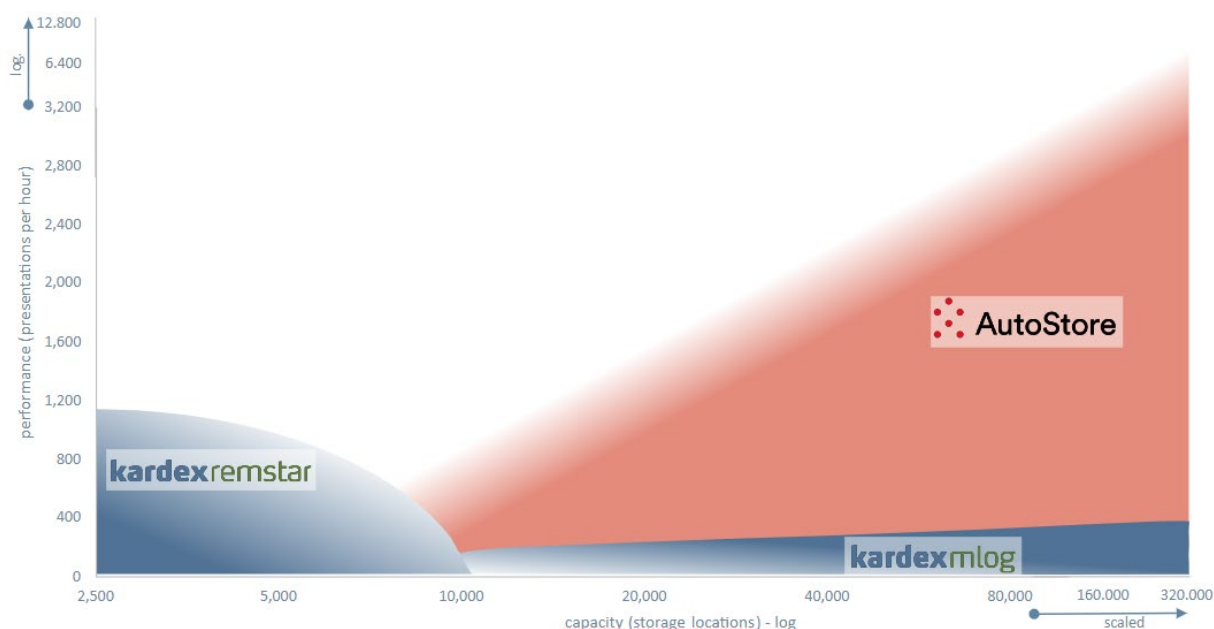
These categories present the most sophisticated step of any intralogistics automation and includes mostly greenfield projects, when the customers move from one or more manually operated sites to



one central logistics center. The fully automated equipment with a stand-alone warehouse control software is categorized as Integrated Standard System, whereas a fully automated equipment with a fully integrated software solution is categorized as Integrated tailor-made System. The level of complexity is determined by the customer’s logistics processes and the various levels of the integration of the information systems required to run the operation.

The following graph shows a mapping of different solution types in the light goods area relative to performance (presentations per hour) and capacity (storage location) criteria.

### Kardex Positioning in Light Goods Logistics with sold Projects



## 5. Financial targets

	Net revenues growth*	EBIT margin*	ROIC
Automated Products		14%-17%	
Standardized Systems		5%-8%	
Kardex	5%-7% p.a.	10%-14%	> 25%

\* Over the cycle of 5 years

Dividend policy (pay-out ratio)	Net debt/EBITDA
Up to 75% of operational Net Profit	<2.5x

## 6. Kardex Segments and Business Units

### 6.1 Reporting Segment: Automated Products

#### 6.1.1 Kardex Remstar

##### 6.1.1.1 Introduction

#### Overview

##### Key figures

- Marketshare >35%\*
- >1'700 FTE
- >140'000 installed solutions worldwide
- 2 manufacturing sites in Germany
- 1 manufacturing site in the USA
- Present in >30 countries

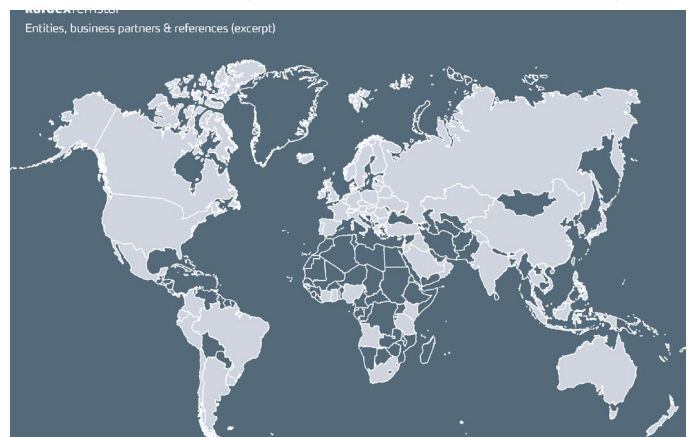
##### Solutions

- Automated Storage & Retrieval Systems
- Buffering & Sequencing
- Order Fulfilment
- Climated controlled order fulfillment
- Specific industry applications

##### Product portfolio

- Vertical Lift Modules
- Vertical Carousel Modules
- Miniload in a box
- Horizontal Carousel Modules
- Heavy Duty Units
- Software & Control Solutions
- Kardex Accessories (VLM/VCM/VBM Box)

#### Entities, business partners & references (excerpt)



\* company estimate

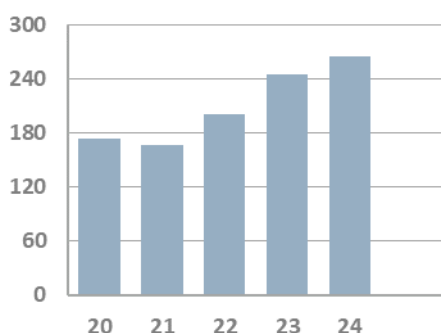


### Key figures for Automated Products

in EUR million	01.01. - 30.06.2024 (%)		01.01. - 30.06.2023 (%) (+/-%)		
Bookings	264.6	99.5%	272.5	111.1%	-2.9%
Order backlog (30.06.)	311.8	117.3%	344.6	140.5%	-9.5%
Segment net revenues	265.8	100.0%	245.3	100.0%	8.4%
Gross Profit	104.1	39.2%	94.5	38.5%	10.2%
EBITDA	48.9	18.4%	45.3	18.5%	7.9%
Operating result (EBIT)	44.4	16.7%	41.2	16.8%	7.8%
Employees (FTE on 30.06.)	2'060		1'795		14.8%

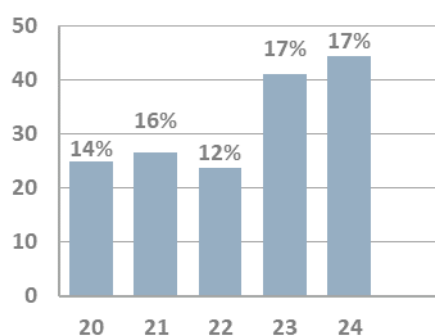
#### Net revenues

01.01. - 30.06. in EUR million



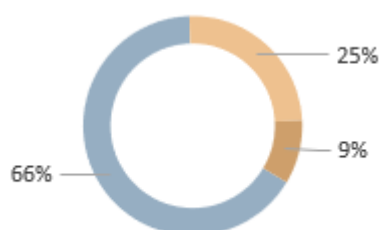
#### EBIT and EBIT margin

01.01. - 30.06. in EUR million and in %



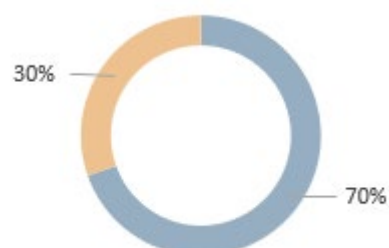
#### Net revenues by region

01.01. - 30.06.2024



#### Net revenues by function

01.01. - 30.06.2024



- Europe, Middle East and Africa
- Americas
- Asia/Pacific

- New Business
- Life Cycle Services

Kardex Remstar customers can be found in a broad range of industries, from highly industrialized through to office environments.

Segment Name	31.12.2023
Wholesale / Retail / E-Commerce	17%
Electronics	14%
Mechanical Engineering	16%
Healthcare / Pharmaceuticals / Hospitals	9%
Automotive / Transportation Equipment	8%
Public Administration / Government	6%
Third-party Logistics / Transportation	3%
Metal	9%
Consumer Goods	5%
Others	13%

Kardex Remstar has subsidiaries throughout Europe, Middle East/Africa, AsiaPacific and the US. For Kardex Remstar, the combination of local presence with a global sales and service organization has become a crucial differentiator in terms of securing and gaining market share. Key success factors are high product quality, customer proximity with short response times, high and fast availability of spare parts and reduced general maintenance intervals. In addition, a professional global support network helps to ensure timely solutions to all customer needs.

Kardex Remstar's business is organized into two main units – New Business, Life Cycle Service.

### **New Business**

This unit is in charge of the customer journey from first touchpoint through to implementation and acceptance of delivered solutions. One of the main goals is to assure a continuous generation of new customers in existing and new industry segments via targeted marketing and business development activities. Kardex Remstar Portfolio presents a combination of solutions and products. The entire portfolio is based on highly standardized, industry neutral products and can be adapted to specific industries (e.g. pharma, automotive, electronics) and to specific customers (e.g. special unit dimensions, specific features). The product portfolio is sold to the market either as single product or as part of systems.

### **Life Cycle Service**

This unit serves as lifetime partner supporting all customer needs from acceptance and hand-over to the end of life of a single product or an entire system. It offers support and improves the customer's installations in a proactive manner. Due to changing market environments, these activities are shifting more towards predictive, project-based, and consulting services. One of the main goals is to assure maximum equipment and system uptime to support highest productivity for the customers. Life Cycle Services secures customer loyalty by meeting or exceeding customer expectations in terms of best-in-class accessibility, high operational speed and excellent quality. Life Cycle Service solutions offered to customers can be divided in 3 main service products:

**Field services, accessories and spare parts**

- Service contract portfolio with three different levels “Base Care”, “Flex Care” and “Full Care” covering preventive maintenance, repair and parts services
- Configurable “Software Care” contract, ensuring the best performance of the customer’s software package
- Preventive maintenance and ad-hoc repair service for non-contract customers
- Spare parts services delivery to customers for preventive or corrective replacement
- Spare parts packages/kits to assure high performance and high availability of installed equipment
- After Sales accessories and software licenses

**Technical support**

- Remote support services for equipment and the installed software suite providing support via remote to minimize machine downtime in case no physical repair on-site is required

**Relocation and modifications**

- Move equipment due to customer needs, e.g. to optimize workflow layout
- Safety upgrade kits to conform to new safety regulations
- Technology update packages for hardware and software
- Functional upgrade packages

**Other services**

- Training for various levels of customer user groups (operators, super users, maintenance, etc.)
- Technician certification programs for business partners
- Data based digital services (as future product)
  - This new offering includes the monitoring and analysis of operational data and technical equipment data from the live operation.
  - The processed data is used to predict required maintenance and repair interventions to maximize uptime.
  - In addition, operational data will be used to optimize customers equipment utilization regarding storage or picking.

**6.1.1.2 Solution and product portfolio**

Best-in-class equipment and software (product portfolio) is one of the most important success factors for profitable growth. All Kardex Remstar solutions are mainly based on the Kardex Remstar’s equipment and software portfolio. In addition, a combination of Kardex own products with innovative 3rd party technology as well as cross-divisional solutions complete the solution portfolio offered to the customers.

The New Business product portfolio can be divided into 6 product families - Vertical Lift Modules (VLM), Vertical Carousel Modules (VCM), Horizontal Carousel Modules (HCM), Miniload in a box, Software Suite and Life Cycle Services.

The following exhibit shows the product portfolio of Kardex Remstar.



Vertical Buffer Modules



Vertical Lift Modules



Horizontal Carousel Modules



Vertical Carousel Modules



Software Suite



Life Cycle Services

Main customer benefits from operating Kardex Remstar solutions:

- High reliability based on many years of engineering experience and high level of standardization
- Intelligent way to get started with automation - with a low investment and low risk product or solution
- Fast returns on invest due to low level of investment combined with increased operational efficiencies and space savings
- Customizable to special requirements or to industry specific needs (e.g. air conditioning, built-in fire protection)
- Kardex solutions are developed according to the goods-to-man concept based on ergonomic principles and protect the health of order pickers by providing goods at an ergonomically ideal height

## 6.2 Reporting Segment: Standardized Systems

### 6.2.1 Kardex Mlog

#### 6.2.1.1 Introduction

##### Overview

##### Key figures

- Strong market position in Germany
- >330 FTE
- >1'000 installed solutions worldwide
- 1 manufacturing site in Germany

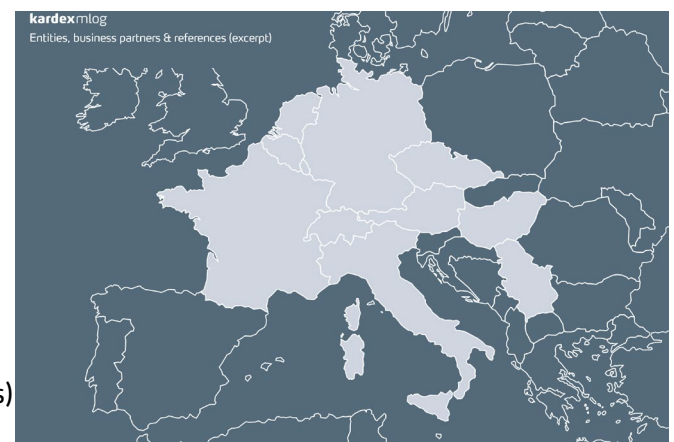
##### Solutions

- Automated Storage & Retrieval Systems
- Order Fulfilment

##### Solution and product portfolio

- Integrated Subsystems
- Industry specific stand-alone Subsystems
- Products (stacker crane modules, conveyor modules)
- Complementary warehouse technology
- Software Suite

##### Entities, business partners & references (excerpt)



Kardex Mlog has two business units: New Business (Integrated Subsystems and Products) and Life Cycle Services (incl. Refurbishment).

Kardex Mlog operates in Germany and some selected countries in Europe. In addition to a push of standardized industry specific solutions and another increase of the Service business, partner models in the product business for standardized stacker cranes and conveyor modules will help to increase business volumes in a profitable way.

#### 6.2.1.2 Solution and Product Portfolio

Kardex Mlog offers a full range of solutions and products for fully automated high bay warehouses for pallet and bin (miniload) handling including conveyors, monorail systems and stacker cranes. Kardex Mlog concentrates on low to mid-complex systems and positions itself as an expert in selected Industry Segments.



The Solution Portfolio is structured in three main categories:

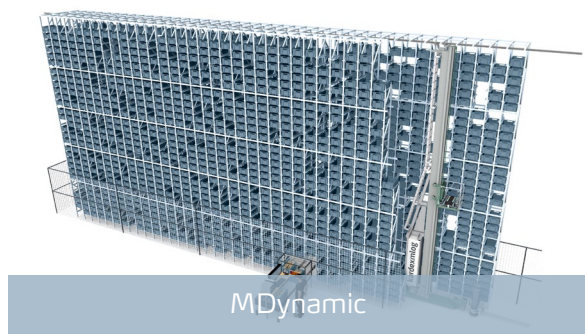
- Systems (Integrated Subsystems and Standardized Industry Specific stand-alone Subsystems),
- Products (including Stacker Crane Modules, Conveyor and Transportation Modules)
- Life Cycle Services (incl. Maintenance, Hotline, Spare Parts, Repairs, other Services and Re-furbishment).

The following exhibit shows a selection of the solution and product portfolio of Kardex Mlog.

### Systems - Integrated Subsystems



### Systems - Standardized Industry Specific (stand-alone) Subsystems



## Products



Stacker Crane Modules



Conveyor Modules



Life Cycle Service (LCS)



Software Suit (KCC)

Kardex Mlog's powerful Software Suite (Kardex Control Center - KCC) is designed to manage and control the material flow and corresponding logistics processes on all levels from controls to warehouse management in an optimal way. With the modular software structure, high customization can be realized which supports a seamless integration into the customer ERP systems (e.g. SAP, Navision, and others). As a result, Kardex Mlog's software solutions maximize the warehouse output in a transparent and energy efficient way.

Main customer benefits from operating Kardex Mlog solutions:

- High reliability of solutions and products based on many years engineering experience and high level of standardization
- Excellent fit to customer requirements
- Efficient and fast warehouse logistic and material flow with low operating cost and reduced energy consumption

## 6.2.2 Kardex AS Solutions

### 6.2.2.1 Introduction

#### Overview

#### Key figures

- Global AutoStore partner, offering flexible and modular cube-based storage system and order fulfillment solutions Strong market position in Europe, USA and Asia Pacific
- >99 FTE

#### Solutions

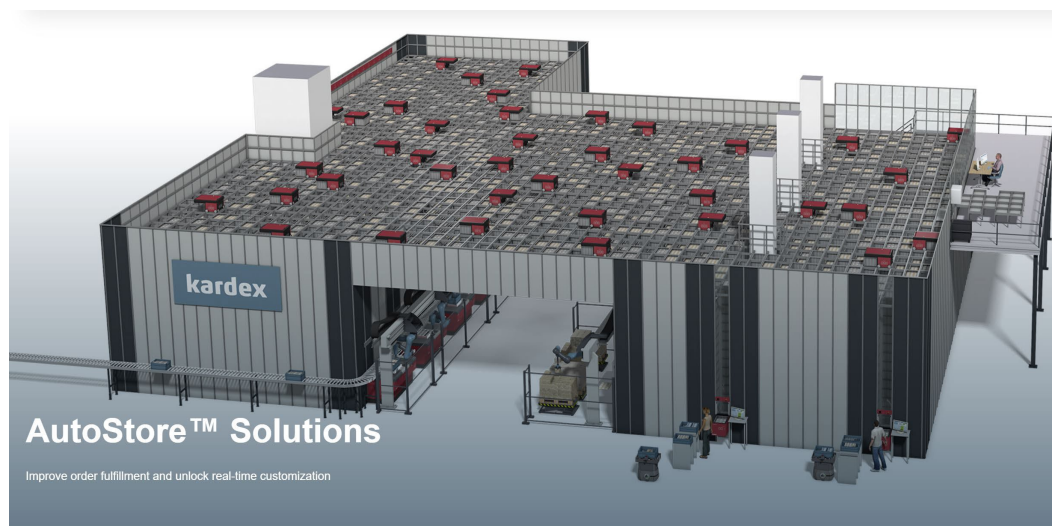
- Modular cube-based automated storage and retrieval system
- Order fulfillment

#### Product portfolio

- Bins
- Grid
- Robots
- Ports (workstation)
- Software and Controller

The company AutoStore™ operates on a business model that combines product sales, service contracts, and strategic partnerships. The company works with a network of certified distributors and system integrators referred to as partners, who help sell, implement, and support AutoStore systems worldwide. Kardex AS Solutions is one of the global AutoStore partners, who offers modular and flexible automated storage and retrieval systems to process orders quickly and efficiently. Providing the highest storage density of any automated storage and retrieval system, AS Solutions offers four times the capacity in the same space compared to conventional systems. AS Solutions is the fastest order fulfillment system per square foot on the market. This warehouse automation system automatically stores fast movers on top while slow movers are stacked over. AutoStore systems are extremely flexible. They can be adapted or expanded based on the business needs, without impacting ongoing operations.



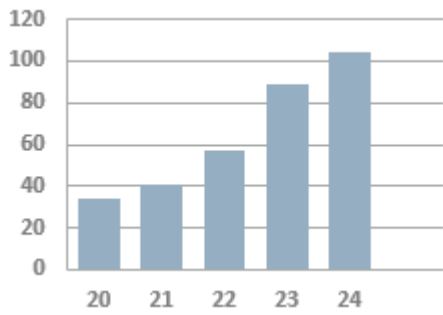


## Key figures Standardized Systems

in EUR million	<b>01.01. - 30.06.2024</b>		01.01. - 30.06.2023		
		(%)		(%)	(+/-%)
Bookings	118.3	113.8%	66.6	74.7%	77.6%
Order backlog (30.06.)	176.5	169.7%	165.4	185.4%	6.7%
Segment net revenues	104.0	100.0%	89.2	100.0%	16.6%
Gross Profit	23.2	22.3%	16.4	18.4%	41.5%
EBITDA	6.4	6.2%	4.8	5.4%	33.3%
Operating result (EBIT)	6.0	5.8%	4.5	5.0%	33.3%
Employees (FTE on 30.06.)	451		384		17.4%

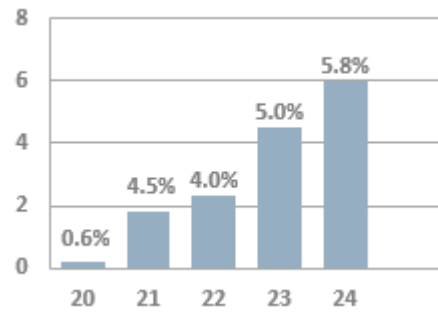
**Net revenues**

01.01. - 30.06. in EUR million



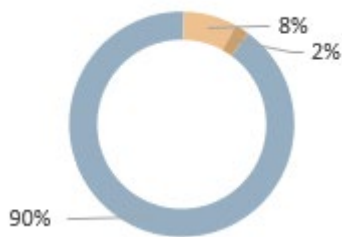
**EBIT and EBIT margin**

01.01. - 30.06. in EUR million and in %



**Net revenues by region**

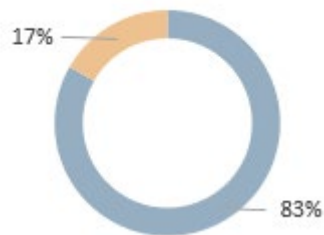
01.01. - 30.06. in %



- Europe, Middle East and Africa
- Americas
- Asia/Pacific

**Net revenues by function**

01.01. - 30.06. in %



- New Business
- Life Cycle Services

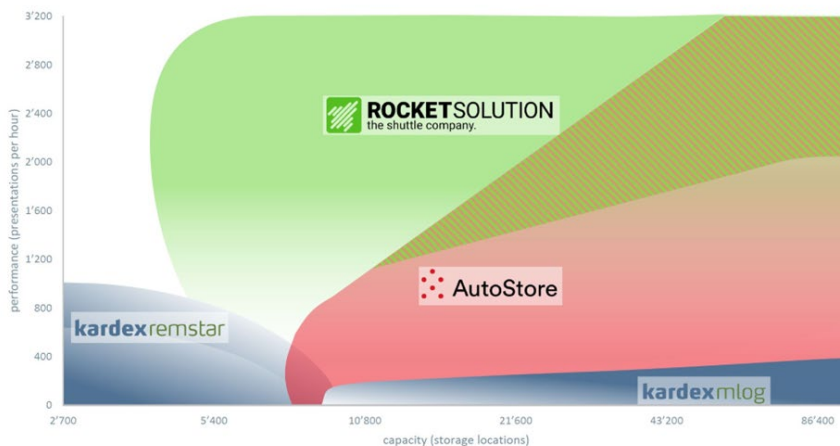
## 7. New investments strategically extend the solution portfolio

A competitive solution portfolio with continuous added value is key for success. By adding and integrating innovative technologies, Kardex will be able to offer best-in-class solutions and innovative life-cycle services. The target of potential acquisitions and partnerships is to drive profitable growth by focusing on automated material handling solutions for items and bins within the extended intralogistics market.

The main criteria for acquisitions and cooperations are diverse. Targets for acquisitions and or cooperations provide market leading technology or are in the process of developing innovative technology with potential to become market leader. Key for any investment and financing decisions is the ability of each target to achieve market success independently from Kardex. In addition, each target company shall provide technology that helps enhancing the legacy Kardex portfolio thus allowing cross selling opportunities with the different Business Units. Last but not least, another key criteria in line with the Kardex business model, each technology must generate potential for Life Cycle Services business.

Starting in 2020, important gaps have been identified and closed with strategic partnerships and investments in new technologies. All of these ventures start under the umbrella and supervision of Kardex Holding. In 2021 Kardex signed a global partnership agreement with Autostore AS. The technology, which has been used very successfully in the market for several years, complements Kardex' range of products and services, particularly in the area of comprehensive order fulfillment solutions. After a successful 2-year grooming period under the supervision of the Kardex Holding, it has become a Business Unit in 2023 and reports together with Kardex Mlog in the segment "Standardized Systems". In 2020 Kardex acquired a minority stake of 26.47% in the German company Rocket Solution GmbH, an independent intralogistics technology provider specialized in developing the latest generations of highly standardized automated storage and retrieval systems. The offering of Rocket Solution and AutoStore can be considered complementary to the existing Kardex Remstar and Kardex Mlog solution portfolios.

### Kardex Positioning in Light Goods Logistics



## 8. Corporate Governance

### 8.1 Board of Directors and Group Management

#### 8.1.1 Board of Directors

Board of Directors	Functions	Committees
<b>Felix Thöni</b> (1959, Swiss citizen) Since 2011	Chairman	
<b>Eugen Elmiger</b> (1963, Swiss citizen) Since 2020	Vice Chairman	Chairman Compensation and Nomination Committee
<b>Philipp Buhofer</b> (1959, Swiss citizen) Since 2004	Member	Member Compensation and Nomination Committee
<b>Eugen Elmiger</b> (1963, Swiss citizen) Since 2020	Vice Chairman	Chairman Compensation and Nomination Committee
<b>Andreas Häberli</b> (1968, Swiss citizen) Since 2020	Member	Member Audit Committee
<b>Jennifer Maag</b> (1969, Swiss and German citizen), since 2022	Member	Chairwoman Audit Committee and ESG Steering Group
<b>Maria Teresa Vacalli</b> (1971, Swiss citizen) Since 2023	Member	Member Compensation and Nomination Committee

## 8.1.2 Management Team

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**Jens Hardenacke**  
Chief Executive Officer

1971, German citizen  
Dr. rer. Pol. WWU Münster, Germany

**Since 2023**

- CEO of Kardex

**2017–2023**

- President and Managing Director positions at Dematic Central Europe / DACH, and China

**2006–2017**

- CEO DMG Asia II, DMG Mori Asia, Singapur and various positions as CEO and Managing Director in Asia and USA at Gildemeister AG

**Other activities**

- None



**Thomas Reist**  
Chief Financial Officer

1971, Swiss citizen  
MAS in Corporate Finance/  
Bachelor of Science FH  
in Business Administration,  
FHNW Zurich/Olten, Switzerland

**Since 2016**

- CFO of Kardex

**2011–2016**

- Head of Finance & Controlling auf Holding-Stufe, Kardex Holding AG, Zurich, Switzerland

**2001–2011**

- Group Controller / Head of Finance & Controlling, Angst+Pfister AG, Zurich, Switzerland / Paris, France

**1998–2001**

- Head of Finance & Controlling, Zimex Aviation AG, Zurich, Switzerland

**Other activities**

- None



**Urs Siegenthaler**  
Head of Kardex Remstar Division

1959, Swiss citizen  
University Degree in Mechanical Engineering, Bern University of Applied Sciences, Biel, Postgraduate Studies in Business Management, Lucerne University of Applied Sciences, Horw, Switzerland

**Since 2019**

- Head of Kardex Remstar Division

**2016–2019**

- Head of New Business Kardex Remstar

**2011–2016**

- Head of Life Cycle Service Kardex Remstar

**2008–2011**

- Divisional Head of TGW Group, Austria

**2007–2008**

- Senior VP Strategic Projects, Swisslog Group, Switzerland

**1999–2007**

- Head of Region / Managing Director, Swisslog Group, Switzerland

**Other activities**

- None



**Hans-Jürgen Heitzer**  
Head of Kardex Mlog Division

1962, German citizen  
Grad. mechanical engineer,  
Aachen Technical University,  
Germany

**Since 2011**

- Head of Kardex Mlog Division

**2010–2011**

- Managing Director, Mlog Logistics GmbH, Neuenstadt, Germany

**2002–2009**

- Managing Director, Locanis AG, Unterföhring, Germany

**2000–2001**

- Division Manager Distribution and Project Management automatic high rack storage systems, MAN Logistics, Heilbronn, Germany

**Other activities**

- None

## 8.2 Extract of the Corporate Governance Report

Kardex has with Remstar, Mlog, and AS Solutions three Business Units and reports in two segments; "Automated Products" and "Standardized Systems".

### «one share – one vote»

The company's 7'730'000 fully paid-up registered shares have a nominal value of CHF 0.45 each. Each registered share corresponds to one vote at the General Meeting ("one share – one vote" principle) and is eligible for dividends. The right to apply the special rules concerning treasury shares held by the company is reserved, particularly in relation to the exception from the entitlement to dividends.

### Registration rules

The Company may refuse registration as a shareholder with voting rights in the share register if upon request the purchaser does not expressly declare that they hold the shares in their name and for their account, that there is no agreement concerning the redemption or return of the shares in question and that they bear the economic risk associated with the shares. The Board of Directors is entitled to delete an entry in the share register with retroactive effect from the date of that entry if such entry was based on false information but may hear the shareholder or beneficiary in question in advance. In each case, the shareholder or beneficiary in question must be immediately informed of the deletion.

### Shareholders' participation rights

On 31 December 2023, there were 3'746 shareholders entered in the share register. Each Kardex Holding AG registered share entitles the holder to one vote at the General Meeting. There are no voting right restrictions. Furthermore, any shareholder has the right to have his shares represented at the General Meeting by written proxy by an independent voting proxy, another shareholder with voting rights or a third party.

Shareholders representing at least 0.5% of the shares issued may request in writing that items be added to the agenda, specifying the proposed resolutions. Such items must be submitted to the Board of Directors in writing at least 40 days before the General Meeting.

### Statutory auditors

PricewaterhouseCoopers AG, Zurich, Switzerland, have been the statutory auditors of Kardex Holding AG since 2014.

## 9. Sustainability Report (ESG)

### 9.1 Extract of the Sustainability Report (ESG)

Sustainability is of central importance at Kardex, influencing interactions with customers, suppliers, and other stakeholders. Kardex views the commitment to sustainability as an opportunity and a basis for future success. The products and systems offered are inherently sustainable, reflecting the essential synergy between long-term business success and the core principles of sustainability.

Kardex' commitment to the world's largest and most significant initiative for sustainable and responsible corporate governance is evident through its ongoing membership in the United Nations Global Compact (UNGC) since 2021. By adhering to the UNGC's ten principles, which encompass human rights, labor, environment, and anti-corruption, Kardex demonstrates its dedication to these critical areas. Each year, Kardex issues a Communication on Progress (COP) report, detailing its activities and achievements in applying these ten principles, as outlined in the Kardex Communication on Progress 2023 (<https://unglobalcompact.org/what-is-gc/participants/149245>).

Kardex has formally integrated sustainability management into the management structures through the ESG Steering Group. The members of this Steering Group include the Chairperson of the Audit Committee, the Chairperson of the Board of Directors, as well as the CEO and CFO from Group Management. The ESG Steering Group is led by the Chairperson of the Audit Committee and reports to the Board of Directors. One full-time internal Sustainability Manager on group-level leads and coordinates the ESG initiatives and reporting cycles. The Board of Directors has validated the material sustainability topics identified by the ESG Steering Group, which now form the foundation of Kardex' sustainability efforts.

Kardex is actively engaging with stakeholders to deepen its understanding and strengthen relationships within the markets it serves. This stakeholder-dialogue not only fosters stronger connections but also plays a crucial role in identifying and exploring potential risks and opportunities relevant to a sustainable value chain.

Kardex continuously expands its reporting on environmental, social and governance matters. The Group follows the requirements on non-financial reporting of the Swiss Code of Obligations. The current Sustainability Report is part of the Annual Report 2023 which can be downloaded [here](#).

#### ESG key figures

per EUR million revenues

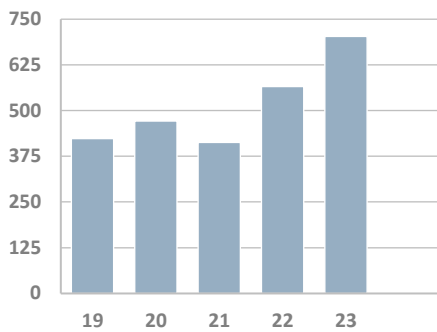
	Unit	2023	2022	(+/-%)
Total CO <sub>2</sub> emissions	tCO <sub>2</sub>	5.5	9.0	-38.9%
Total energy consumption	MWh	31.6	31.7	-0.3%
Total water consumption	m <sup>3</sup>	14.0	12.8	9.4%
Total waste	tons	5.2	6.2	-16.1%



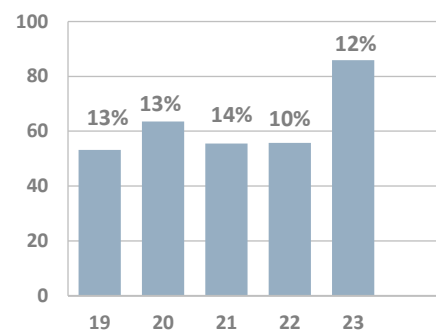
# Key figures and share information

## 1. Key figures 2023 at a glance

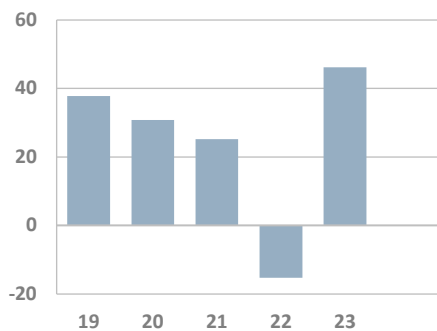
**Net revenues**  
in EUR million



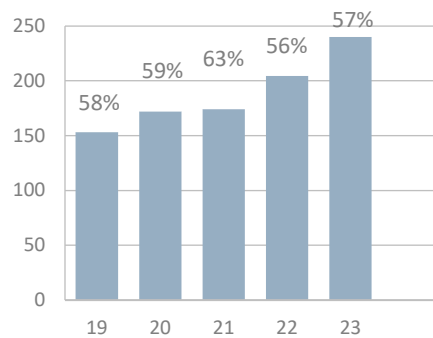
**EBIT and EBIT margin**  
in EUR million and in %



**Free cash flow**  
in EUR million

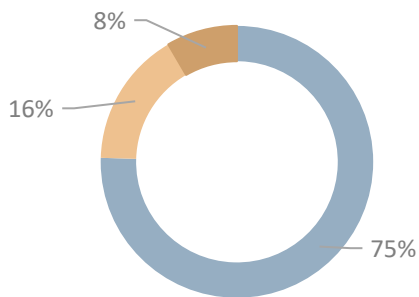


**Equity and equity ratio**  
in EUR million and in %



**Net revenues by business unit**

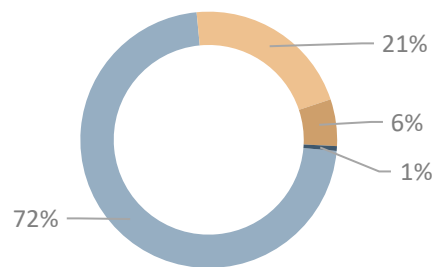
2023 financial year in %



- Kardex Remstar
- Kardex Mlog
- Corporate Ventures

**Net revenues by region**

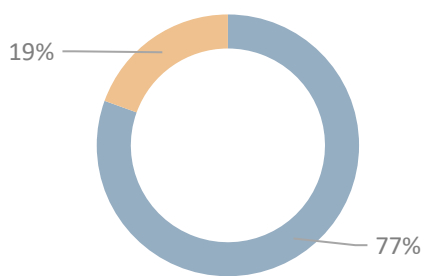
2023 financial year in %



- Europe
- Americas (North, Middle, South)
- Asia/Pacific
- Middle East and Africa

**Net revenues by business unit**

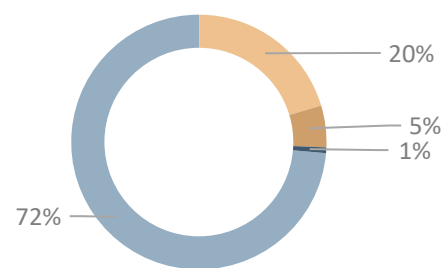
2022 financial year in %



- Kardex Remstar
- Kardex Mlog

**Net revenues by region**

2022 financial year in %



- Europe
- Americas (North, Middle, South)
- Asia/Pacific
- Middle East and Africa

## 2. Financial highlights 2023

### Key figures

in EUR million

1.1.-31.12.	<b>2023</b>	(%)	2022	(%)	+/-%
Bookings	673.9	95.9%	698.6	123.5%	-3.5%
Order backlog (31.12.)	475.9	67.7%	510.5	90.3%	-6.8%
Net revenues	702.9	100.0%	565.6	100.0%	24.3%
Gross profit	235.9	33.6%	177.7	31.4%	32.8%
OPEX	150.0	21.3%	121.9	21.6%	23.1%
EBITDA	99.3	14.1%	65.4	11.6%	51.8%
Operating result (EBIT)	85.9	12.2%	55.8	9.9%	53.9%
Result for the period (net profit)	66.9	9.5%	38.6	6.8%	73.3%
Free cash flow	46.2		-15.2		403.9%
ROIC	37.6%		28.9%		
	<b>31.12.2023</b>	(%)	31.12.2022	(%)	+/- %
Net working capital	102.2		76.2		34.1%
Net cash	119.6		102.7		16.5%
Equity/Equity ratio	240.1	56.9%	204.6	56.2%	17.4%
Employees (FTE)	2'397		2'097		14.3%
	<b>2023</b>	(%)	2022	(%)	+/-%
Distribution per share (CHF)	5.00		3.50		42.9%

### 3. Consolidated balance sheet

in EUR million	31.12.2023		31.12.2022	
		(%)		(%)
Cash and cash equivalents	107.3	25.4%	71.2	19.6%
Trade accounts receivable	93.0	22.0%	80.7	22.2%
Other receivables	47.8	11.3%	32.4	8.9%
Current fixed term deposits	12.3	2.9%	31.5	8.7%
Inventories and work in progress	23.4	5.5%	33.5	9.2%
Prepaid expenses	10.9	2.6%	8.6	2.4%
<b>Current assets</b>	<b>294.7</b>	<b>69.8%</b>	<b>257.9</b>	<b>70.8%</b>
Property, plant and equipment	68.9	16.3%	61.2	16.8%
Intangible assets	8.4	2.0%	11.2	3.1%
Non-current fixed term deposits	-	0.0%	-	0.0%
Financial assets	50.2	11.9%	33.8	9.3%
<b>Non-current assets</b>	<b>127.5</b>	<b>30.2%</b>	<b>106.2</b>	<b>29.2%</b>
<b>Assets</b>	<b>422.2</b>	<b>100.0%</b>	<b>364.1</b>	<b>100.0%</b>
Trade accounts payable	25.7	6.1%	26.3	7.2%
Current financial liabilities	-	0.0%	-	0.0%
Other current liabilities	44.2	10.5%	47.3	13.0%
Current provisions	8.4	2.0%	4.4	1.2%
Accruals	72.6	17.2%	54.4	14.9%
<b>Current liabilities</b>	<b>150.9</b>	<b>35.7%</b>	<b>132.4</b>	<b>36.4%</b>
Non-current provisions	31.2	7.4%	27.1	7.4%
<b>Non-current liabilities</b>	<b>31.2</b>	<b>7.4%</b>	<b>27.1</b>	<b>7.4%</b>
<b>Liabilities</b>	<b>182.1</b>	<b>43.1%</b>	<b>159.5</b>	<b>43.8%</b>
Share capital	2.5	0.6%	2.5	0.7%
Capital reserves	32.3	7.7%	32.1	8.8%
Goodwill offset	-45.0	-10.7%	-42.8	-11.8%
Retained earnings and translation differences	251.1	59.5%	214.3	58.9%
Treasury shares	-1.8	-0.4%	-2.2	-0.6%
<b>Equity before minorities</b>	<b>239.1</b>	<b>56.6%</b>	<b>203.9</b>	<b>56.0%</b>
Minority interests	1.0	0.2%	0.7	0.2%
<b>Equity</b>	<b>240.1</b>	<b>56.9%</b>	<b>204.6</b>	<b>56.2%</b>
<b>Equity and liabilities</b>	<b>422.2</b>	<b>100.0%</b>	<b>364.1</b>	<b>100.0%</b>

## 4. Information on the Kardex share

### Share capital and capital structure

	2023	2022	2021	2020	2019
Par value per share (CHF)	0.45	0.45	0.45	0.45	0.45
Total registered shares	7'730'000	7'730'000	7'730'000	7'730'000	7'730'000
Number of treasury shares	14'210	16'832	17'984	19'560	11'640
Number of outstanding shares	7'715'790	7'713'168	7'712'016	7'710'440	7'718'360
Registered capital (CHF 1'000)	3'479	3'479	3'479	3'479	3'479
Total voting rights	7'715'790	7'713'168	7'712'016	7'710'440	7'718'360

### Key stock exchange figures per share

CHF	2023	2022	2021	2020	2019
Share price high	223.50	306.00	313.00	197.60	178.40
Share price low	153.80	125.80	184.00	92.30	112.20
Closing rate	218.00	152.00	300.00	193.60	163.00
Average volume per trading day (no. of shares)	8'801	9'629	9'667	23'664	17'167
Market capitalization per 31.12. (CHF million)	1'685.14	1'174.96	2'319.00	1'496.53	1'259.99

### Key figures per share

CHF	2023	2022	2021	2020	2019
Earnings per share (EPS) <sup>1</sup> – basic	8.39	4.93	6.15	5.65	6.39
Earnings per share (EPS) <sup>1</sup> – diluted	8.39	4.93	6.15	5.65	6.39
Price earning ratio (closing rate)	26.02	30.94	48.87	34.35	25.54
Dividend <sup>2</sup>	5.00	3.50	4.30	4.00	4.50
Dividend yield	2.3%	2.3%	1.4%	2.1%	2.8%

<sup>1</sup> Calculated by the generally accepted method (net profit/average number of outstanding shares).

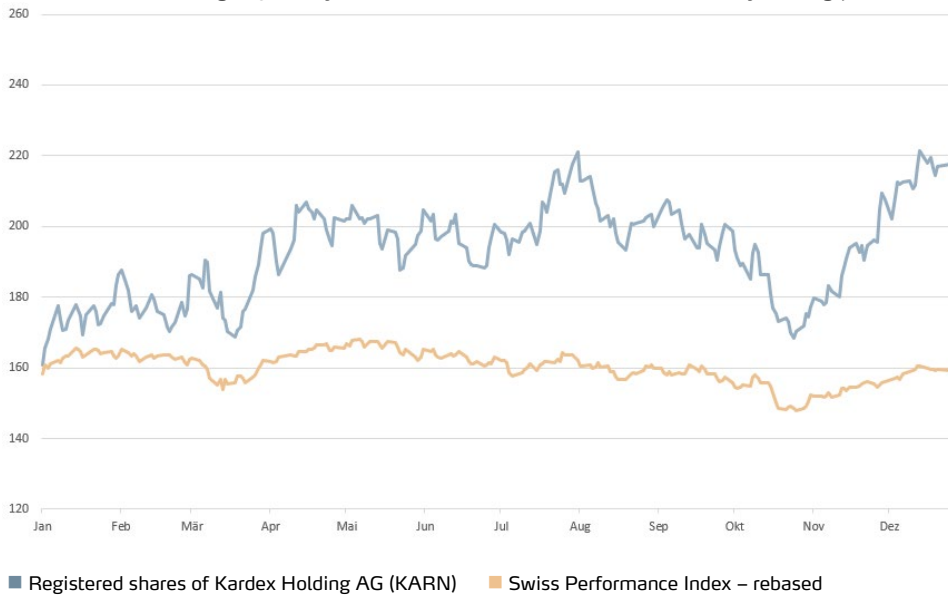
<sup>2</sup> 2023: Distribution of a dividend as proposed to the Annual General Meeting on 25 April 2024.

Kardex Holding AG is listed on the SIX Swiss Exchange, underlies the Swiss Reporting Standard and the shares are included in the SPI (Swiss Performance Index). Stock exchange symbol: KARN; Swiss securities number: 10083728; ISIN number: CH0100837282; Bloomberg: KARN SW Equity; Reuters: KARN.S. Current prices can be seen at [www.kardex.com](http://www.kardex.com).

## Share price performance

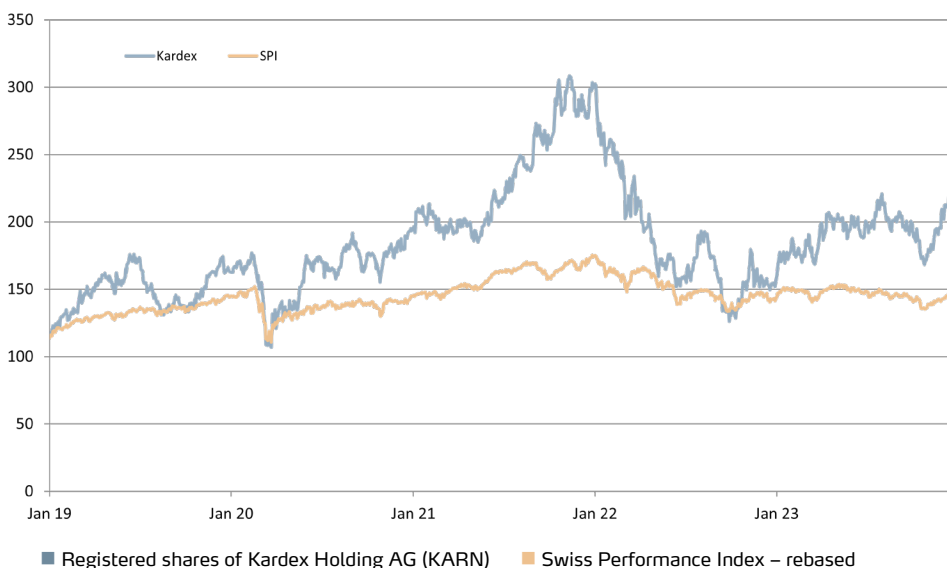
### Kardex Holding AG share

On SIX Swiss Exchange 1 January to 31 December 2023, based on the daily closing price in CHF



The value of the Kardex share increased by 43.4 % (increase of 49.3%) from CHF 152.00 to CHF 218.00 during 2023. Kardex paid a dividend of CHF 3.50 per share in April 2023. The Total Shareholder Return (TSR) for the year was +45.7% (-47.9%).

On SIX Swiss Exchange 1 January 2019 to 31 December 2023, based on the daily closing price in CHF



## Shareholder structure

As at 31 December 2023, there were 3'746 shareholders (3'505) entered in the share register. The following shareholders held 3% or more of the outstanding share capital of Kardex Holding AG at year end.

	31.12.2023	31.12.2022
BURU Holding AG and Philipp Buhofer	22.1%	22.1%
Kempen Capital Management N.V.	5.7%	6.4%
Alantra Partners S.A.	4.2%	5.4%
Credit Suisse Funds AG	3.1%	
Invesco Ltd.		3.1%

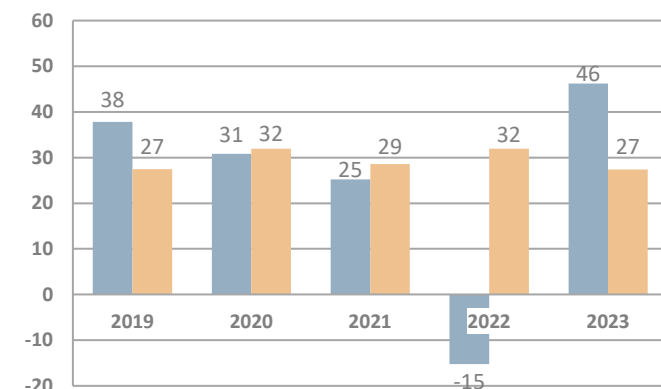
## 5. Attractive dividend policy

Based on a resolution at the Annual General Meeting, up to 75% of the net profit (based on the consolidated group result) will be paid out to the shareholders.

Over the last four years the free cash flow has been well in excess of the dividend amounts.

### Cash flow and dividend/payout to the shareholders

In EUR million



- Free cash flow
- Ordinary dividend incl. capital reduction (related to financial year)

# Industry outlook

## 1. Intralogistics overview

Modern, smart intralogistics has a major impact on the productivity of companies in any industry segment and of any size. Whatever goods are stored, a reliable and efficient storage and retrieval system significantly reduces human resource requirements and logistics costs. Excellent logistics processes are expressed in the form of low stock levels, short supply times, on-time delivery, low error rate and low logistics costs. For manufacturing and warehousing/distribution companies, the task is to plan, control and monitor logistics processes with a very high degree of precision and to define the required level of automation to support those processes in the best possible way. Intralogistics automation is benefiting significantly from current trends such as labor shortages, reshoring/nearshoring, and an aging population that is impacting equipment ergonomics and safety. Automation in intralogistics not only addresses these challenges by improving efficiency and reducing reliance on manual labor, but also helps companies remain cost-competitive in a rapidly evolving global marketplace. This technological advancement has become the cornerstone for companies seeking to optimize their operations and maintain economic viability in the midst of these transformative trends.

## 2. Global trends and drivers impacting intralogistics

### 2.1 Sound global demand

According to Oxford Economics, world GDP is expected to grow by 2.6% in 2024 and pick up slightly to 2.8% in 2025, which bodes well for Kardex' business units, whose strategies are geared to benefiting from geographical expansion. However, many economies are still absorbing the impact of the war in Ukraine, which is still a concern for the outlook.

According to experts from LogisticsIQ, the intralogistics market will outperform the global economy. Their latest market research estimates that the Global Warehouse Automation Market will reach the milestone of \$44 Billion by 2028, at a CAGR above GDP growth. The year 2021 witnessed a huge order intake for warehouse automation companies, but revenue growth was limited due to supply chain constraints. As a result, the industry entered 2022 with a record order backlog, which was reduced in 2023 due to a slowdown and macro uncertainties.

The intralogistics market as a whole moves in line with the global economy, albeit with a time lag. This cyclicity is induced in the industry by its end users, who postpone or cancel their investment activities in the event of a downturn but have to invest heavily in the event of an economic upturn. This cyclicity and the associated time lags were also observed during the great financial crisis of 2008/2009 and the subsequent economic recovery. The time lag between economic recovery and an increase in intralogistics orders and shipments is approximately 9-12 months and is determined by factors such as the capital intensity of installed solutions and the dependence of new orders on capacity expansion. Although Kardex has been affected by this cyclicity in the past, the increase in revenues from after-sales services, which account for around 30% of total revenues, has significantly reduced the impact of economic cycles on the company. During the COVID pandemic in 2020, after-sales services proved to be a stabilizing pillar in terms of revenues and margin.

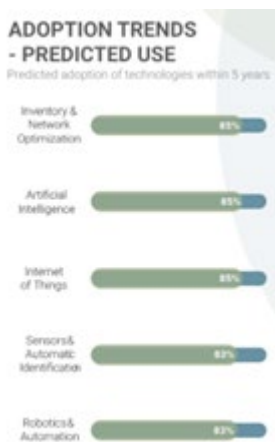


## 2.2 Growing level of automation

Due to labor shortage, e-commerce penetration, and change in consumer behavior, the adoption of warehouse automation technologies is on the rise. Globalization on the one hand, re-shoring of manufacturing on the other hand, a faster than ever booming e-commerce industry (see below) and the adoption of robotics will have a long-term positive effect on warehouse automation.

Sustainability has also become a pivotal driver for the growing level of automation in intralogistics. Companies are increasingly adopting automated solutions to reduce their environmental footprint and promote greener operations. Automation technologies significantly cut down on energy consumption and emissions compared to traditional, manual processes. Additionally, automated systems improve precision and efficiency, minimizing waste and optimizing resource use. By integrating these sustainable practices, businesses not only comply with environmental regulations and standards but also enhance their corporate social responsibility profiles, attracting environmentally conscious consumers and partners.

Based on the 2024 MHI Annual Industry Report – conducted by MHI and Deloitte – 83% of the participants tend to implement Robotics & Automation solutions within the next couple of years.



Source: 2024 MHI Annual Industry Report

Other technologies receiving significant investments – such as predictive analytics, internet of things, autonomous vehicles or fulfillment robots – integrate well into intralogistics automation.

Future manufacturing units as well as warehouse and distribution centers will be focused on agility and a high degree of flexibility. They will utilize technologies that can change order fulfillment strategies instantly and potentially handle big swings in demand or be modular enough for enhancements. To further improve efficiencies, companies will leverage software solutions to connect technologies throughout the supply chain for a more holistic and efficient order fulfillment process. As manufacturing units and distribution centers look to position themselves for the future, automation have already become a key factor.

## 2.3 Aging society and stronger health and safety regulations

One of the great achievements of the last century is the rise in life expectancy, not only in the western economies but also in developing countries. This accomplishment combined with a reduction of birth rates leads to changed demographics and thus comes with significant long-term economic consequences. An aging population means fewer people in their working age in the economy, which leads to a supply shortage of qualified workers, higher labor costs, increased health care costs and pension commitments.

This leads to not only a need for an increased level of automation in the entire supply chain from sourcing to manufacturing and logistics, but also to adjustments on the machines, tools, devices and software to suit the requirements of an aging workforce. The industry will have to adapt to support and accommodate the user needs of the aging workforce. More and more organizations are starting to deploy ergonomically designed automation systems which help workers complete their tasks while simultaneously eliminating the risk of injury. In addition to enhancing safety, the devices can boost productivity and reduce a variety of costs – positioning both workers and companies for operational success.

Intralogistics has seen a transformative impact from automation, particularly in how it facilitates faster onboarding and ease of use for less trained personnel. Automated systems streamline complex processes and reduce the learning curve for new employees. As a result, companies can onboard staff more rapidly and efficiently, ensuring productivity is maintained even as workforce dynamics change. This not only enhances operational efficiency but also reduces training costs and downtime, ultimately leading to a more agile and responsive intralogistics environment.

In addition to the higher standards required for an aging workforce, companies will have to comply with stronger health and safety regulations. This can also be seen as an opportunity for companies to modernize and automate their intralogistics.

## 2.4 Urbanization & smart cities

Half of the world's population now lives in cities. By 2050, this figure is predicted to rise up to 75% (*source: UN DESA 2018*). The largest movements towards urban centres are taking place in Asia, Africa and Latin America. The interplay between modern information and communication technologies and wireless sensor networks allows cities to become smart cities. Goods, people and traffic flows can be managed in a decentralized and adaptive way. The local production and distribution of goods lead to a growing demand for smart intralogistics solutions. As the need for same-day (or even faster) delivery will increase, goods have to be stored closer to the end-customer, but storage space in cities is limited and expensive. Therefore new distribution and warehouse concepts will emerge.

Large distribution centers will still be necessary to store a high number of products & goods. In addition there will be a trend to smaller or shared warehouses/distribution centers in the suburban areas and "micro depots" in the cities. This trend leads to increasing demand for scalable, flexible and automated storage solutions, which can among others be addressed by Kardex' solution portfolio. Micro-fulfillment goes hand in hand with urbanization. This concept is about placing small-scale warehouse facilities in accessible urban locations close to the end-consumer – tiny, city warehouses that utilize highly automated systems to fulfill online orders with greater efficiency and substantially reduced delivery times.

# Competitive landscape

## 1. Competitors

Overall, Kardex competes with many large and mid-size as well as local, regional and global companies which are operating in businesses similar to the business units of Kardex. It is important to note that Kardex does not compete as a whole, as it operates in different segments of the intralogistics industry with three business units.

Kardex Remstar enjoys market leadership in the dynamic storage solutions market in many countries with a global market share of approximately >35%. A long-standing experience in the dynamic storage and retrieval market, a broad range of automated storage and retrieval solutions, a global presence and first-class after-sales services are the factors that give Kardex Remstar an edge over its competitors. Today, about 80% of total revenue of Kardex Mlog is generated in the German market. Kardex estimates that Kardex Mlog ranks amongst the first three manufacturers of stacker crane modules in Germany and is leading in certain niche markets. Since AutoStore is sold and serviced through a network of qualified system integrators, Kardex AS Solutions competes with all other partners, of which the five global partners listed below are the main competitors.

The following table lists various peers (direct competitors) of Kardex by Business Units

<b>Kardex Remstar</b>	<b>Kardex Mlog</b>	<b>Kardex AS Solutions</b>
<u>Modula S.p.A.</u>	<u>SSI Schäfer Fritz Schäfer GmbH</u>	<u>Element Logic</u>
<u>Hänel GmbH &amp; Co. KG</u>	<u>KNAPP AG</u>	<u>Dematic GmbH</u>
<u>Ferretto Group S.p.A.</u>	<u>Dambach Lagersysteme</u>	<u>Swisslog</u>
		<u>Bastian Solutions</u>
		<u>Fortna</u>

The majority of Kardex Remstar's, Kardex Mlog's and Kardex AS Solutions' peers are privately held or are divisions of larger corporations.

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Version 7.0, August 2024

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