

# Investor Handbook

Version 6.0 – April 2021

Further information:



# Table of contents

1	Executive summary
	Kardex in brief
	Intralogistics market and key trends
	Strategic growth drivers for Kardex
	Differentiating factors
	Key financials
4	Kardex Company Profile
	Introduction
	Historical evolution
	Group structure
	Business model and group strategy
	Financial targets
	Kardex divisions
	Corporate Governance
	Sustainability
31	Key figures and share information
	Key figures at a glance
	Financial highlights 2020
	Consolidated balance sheet
	Information on Kardex share
	Attractive dividend policy
38	Industry outlook
	Intralogistics overview
	Global trends and drivers impacting intralogistics
43	Competitive landscape
	Competitors

# Executive Summary

## 1. Kardex in brief

Kardex is a leading intralogistics solution provider of automated storage, retrieval and material handling systems in an attractive and growing market. With two entrepreneurially managed divisions, Kardex Remstar and Kardex Mlog, Kardex developed from a product and service supplier into a global industry partner providing solutions and services under the Kardex brand name. Kardex is well positioned to grow in a market with strong fundamentals and to achieve attractive financial returns.

Kardex has four manufacturing facilities and approximately 1 900 employees in over 30 countries worldwide.

Kardex Holding AG is listed on the SIX Swiss Exchange since 1987.

## 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 new (e.g. internet-based) 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.

There are a lot of global trends that are causing change to the industry. 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. There will be a fundamental change in requirements to the intralogistics core technology and product portfolios with the increasing need for smart machines. In addition to embedded controls, artificial intelligence has become a commercial reality and these new technologies will serve as enablers for more efficient solutions.

### 3. Strategic growth drivers for Kardex

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

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

The main geographic growth will be based on an increased market penetration in regions such as North America and Asia. In addition, 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. To further broaden the revenue streams, Kardex will further exploit existing and develop additional industry segments with existing standard solutions or new industry specific solutions.

### 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. The two divisions are unified under a strong group brand.

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

With over 140 000 installed Kardex Remstar machines and close to 1 000 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.

#### **Industry specific stand-alone Subsystems**

Both divisions strive to become subject matter experts about trends, pains and logistics requirements in selected Industry segments. Developing to this expert level will enable Kardex to offer industry specific solutions for the various segments which are enjoying a rising demand.

#### **Global footprint**

Kardex's global footprint offers a strong basis to provide sales and service worldwide and to partially mitigate the risk of local or regional downturns.

## 5. Key financials

### Key figures

in EUR million

1.1.-31.12.	2020		2019	+/-%	
Bookings	416.8	100.9%	452.4	96.0%	-7.9%
Order backlog (31.12.)	220.2	53.3%	217.8	46.2%	1.1%
Net revenues	412.9	100.0%	471.2	100.0%	-12.4%
Gross profit	153.0	37.1%	171.3	36.4%	-10.7%
OPEX	97.5	23.6%	107.8	22.9%	-9.6%
EBITDA	62.6	15.2%	70.2	14.9%	-10.8%
Operating result (EBIT)	55.5	13.4%	63.5	13.5%	-12.6%
Result for the period (net profit)	40.7	9.9%	44.9	9.5%	-9.4%
Net cash flow from operating activities	49.8		44.8		11.2%
Free cash flow	25.2		30.8		-18.2%
ROCE	43.7%		51.2%		

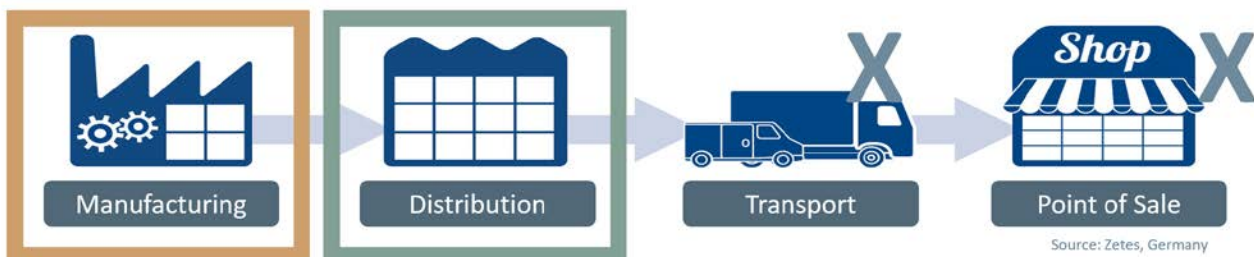
	31.12.2020		31.12.2019	+/- %	
Net working capital	67.9		77.3	-12.2%	
Net cash	122.3		133.6	-8.5%	
Equity/Equity ratio	174.3	62.9%	172.0	59.4%	1.3%
Employees (FTE)	1 860		1 913		-2.8%

	2020		2019	+/-%
Distribution per share (CHF)	4.00		4.50	-11.1%

# Kardex Company Profile

## 1. Introduction

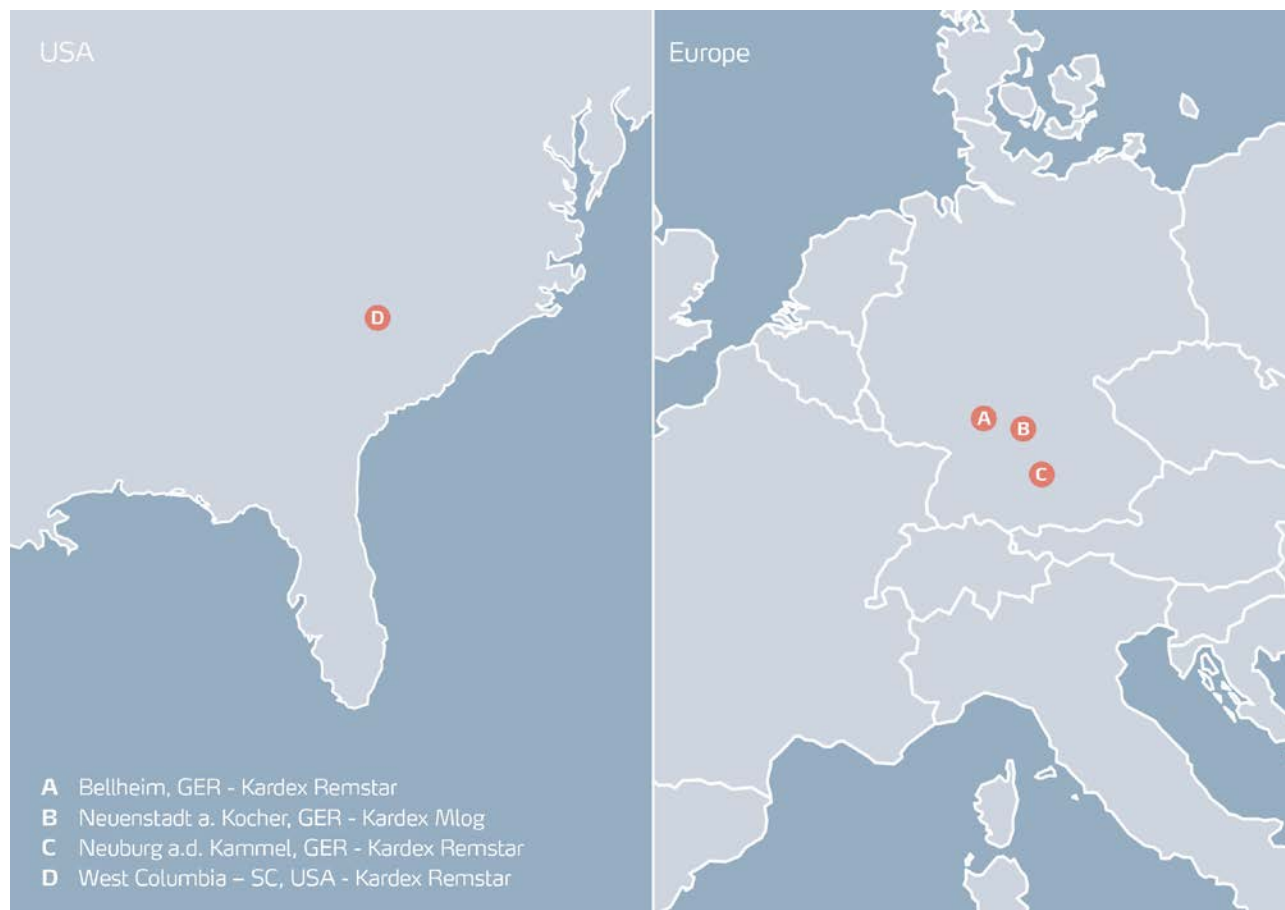
Kardex is a leading intralogistics solution provider of automated storage, retrieval and material handling systems focussing on efficient order fulfilment solutions. Intralogistics solutions cover the material logistics and handling but also the information management within manufacturing or distribution centers and aims to improve efficiency through increased performance and cost reduction. Intralogistics does not include the transportation outside the manufacturing and distribution centers.



Kardex consists of the two divisions Kardex Remstar and Kardex Mlog. Both divisions are partners for their customers over the entire life cycle of a product or solution. 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 plus a logistics hub and manufacturing facility under construction in the US, and has approximately 1 900 employees in over 30 countries worldwide.

## Manufacturing sites



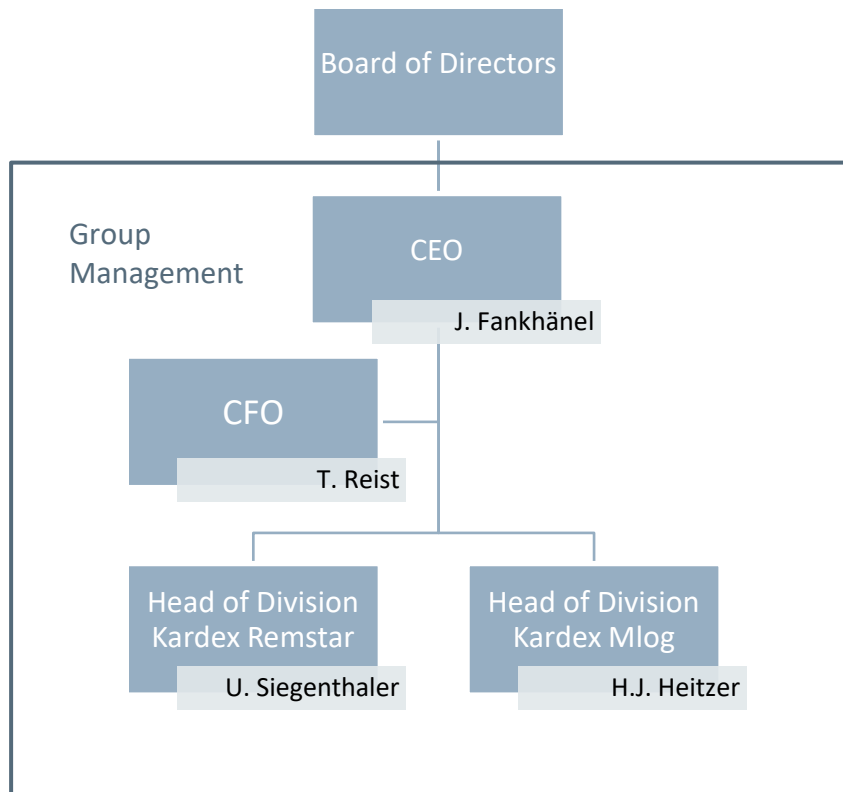


## 2. Historical evolution

1977	Kardex incorporated under Swiss law
1981	Kardex Holding AG opens the North American operations Remstar in Westbrook, ME
1987	Kardex listed on the SIX Swiss Exchange
1996	Acquisition of Megamat GmbH, Germany (former competitor in Germany)
2000	Acquisition of AFT Automation and Conveying Systems GmbH, Germany; Creation of the AFT Division
2001	Acquisition of 60% of the Stow Group, Belgium
2003	Kardex takes over the remaining 40% of the Belgian Stow Group; Creation of the Stow Division
2004	Split Kardex shares 1:5
2007	Sale of the AFT Division; Integration of Kardex International and Megamat to strengthen the Kardex Remstar Division
2008	Acquisition of Kardex Systems Inc. (Marietta, OH), a former competitor in the US
2009	Remstar (Westbrook, ME) and Kardex Systems Inc. (Marietta, OH) merge to form Kardex Remstar Inc.
2010	Acquisition of Mlog Logistics GmbH, Germany; Creation of the Mlog Division
2011	Change accounting standards to Swiss GAAP FER
2011/12	Strategic repositioning and recapitalization
2013	Sale of Stow Division
2020	Acquisition of majority in Robomotive (Netherlands), and minority investment in Rocket Solution GmbH (Germany)
2021	Kardex becomes global partner of AutoStore

### 3. Group structure

Kardex consists of two entrepreneurial managed divisions, organized under the roof of a holding company. The divisions run as stand-alone units with full P&L and balance sheet responsibility. The central functions managed at holding level are kept at a minimum. Kardex is led by the Board of Directors and the Group Management, which consists of CEO Jens Fankhänel, CFO Thomas Reist, Head of the Kardex Remstar division Urs Siegenthaler and Head of the Kardex Mlog division Hans-Jürgen Heitzer.

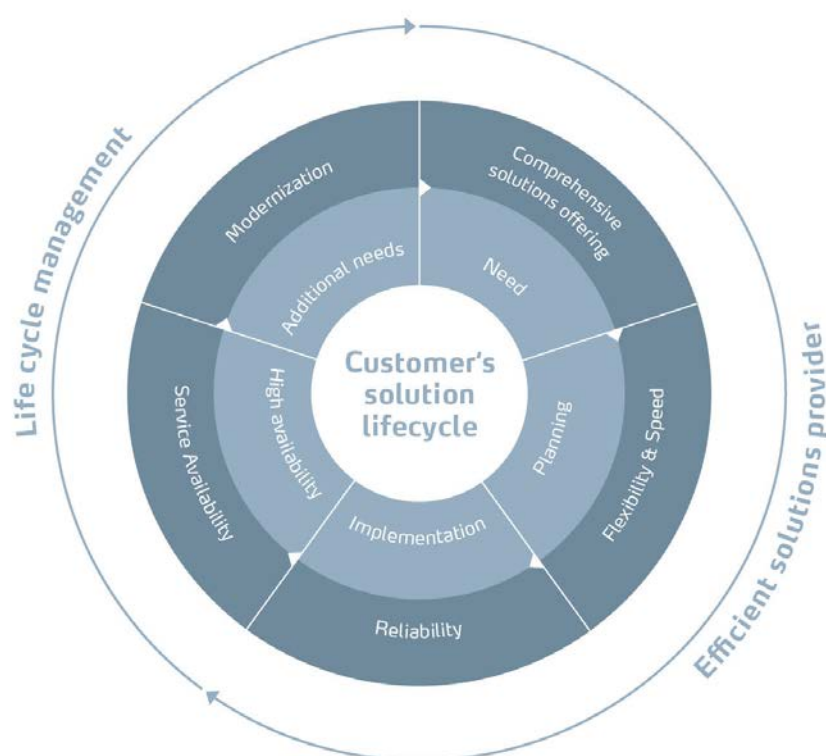


## 4. Business model and group strategy

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 and Kardex Mlog are leading providers of solutions and services for automated storage, retrieval, and materials handling and order fulfilment. The Kardex portfolio includes products for heavy to light goods, a modern software suitesolutions, integrated subsystems and life cycle services.

Based on a comprehensive product and service offering, the divisions 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.

### Business Model

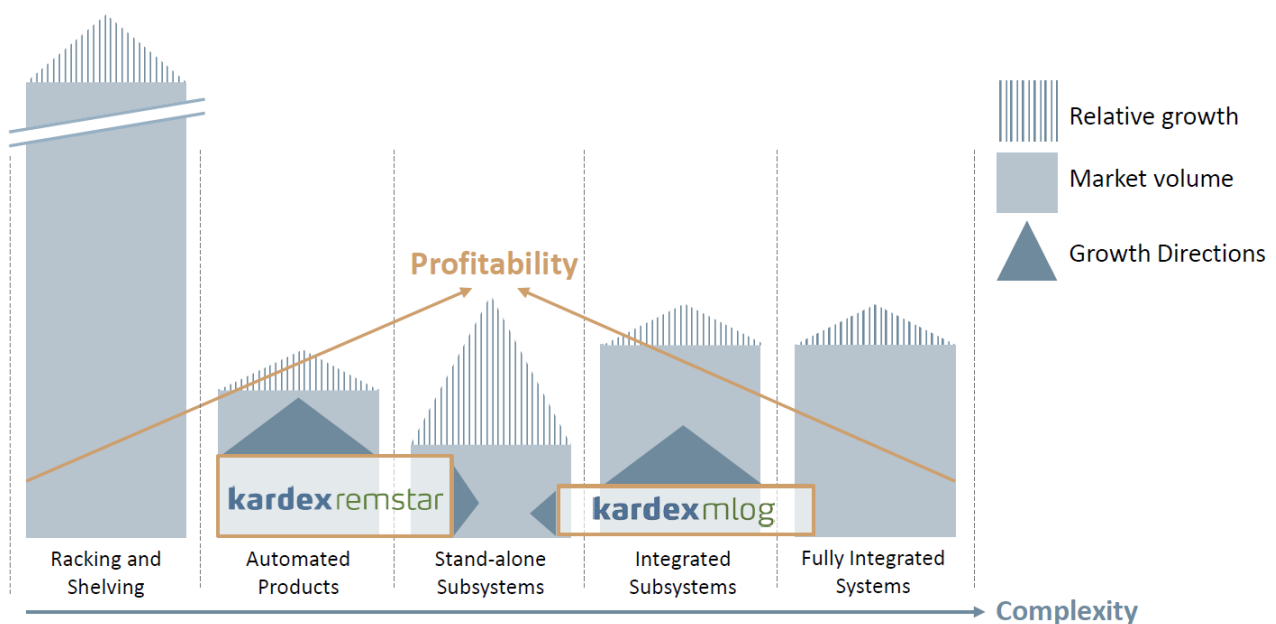


### Strategic growth directions

Kardex will move to a next level based on three main strategic growth directions – geographical expansion, leverage of existing customer base with new solutions and services and focus on target industry segments. Both Kardex divisions 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.

In terms of product and solutions offering, both divisions are increasing their efforts to further penetrate the solution category of standardized, stand-alone Subsystems, which shows one of the highest growth rates combined with attractive margins and lower risk levels. This market is driven by the need for standardization in many industries as well as new business model requirements from smaller (light industrial and service) companies, like webshops.

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 Automated 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).



### 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 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 growing fast as it offers the best returns based on the combination of low risk and high level of standardization.

### Integrated Subsystems and Fully Integrated 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 Subsystem, whereas a fully automated equipment with a fully integrated software solution is categorized as Fully Integrated 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.

## 5. Financial targets

	Net sales growth*	EBIT margin*	ROCE
Kardex Remstar		8%-16%	
Kardex Mlog		4%-8%	
Kardex	4%-5% p.a.	> 6%	> 20%

\* 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 divisions

### 6.1 Division Remstar

#### 6.1.1 Introduction

#### Overview

##### Key figures

- Marketshare >35%\*
- 1 550 FTE
- > 140 000 installed solutions worldwide
- 2 manufacturing sites in Germany
- 1 logistics hub/manufacturing site in the USA
- Present in >30 countries

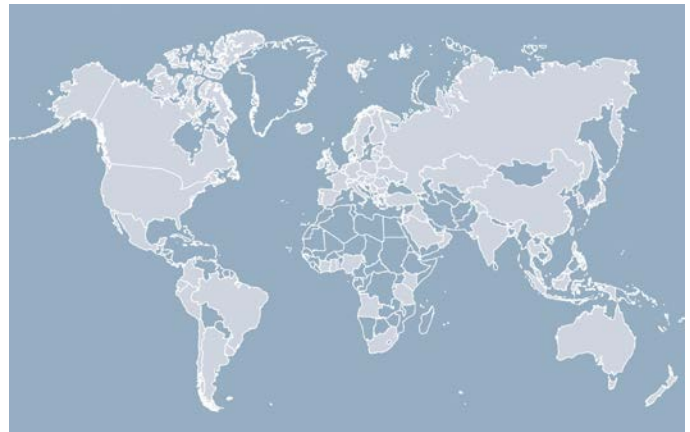
##### Solutions

- Automated Storage & Retrieval Systems
- Buffering & Sequencing
- Order Fulfilment
- Controlled Environment
- Document Storage

##### Product portfolio

- Vertical Lift Modules
- Vertical Carousel Modules
- Vertical Buffer Modules
- Horizontal Carousel Modules
- Software Suite

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



\* company estimate

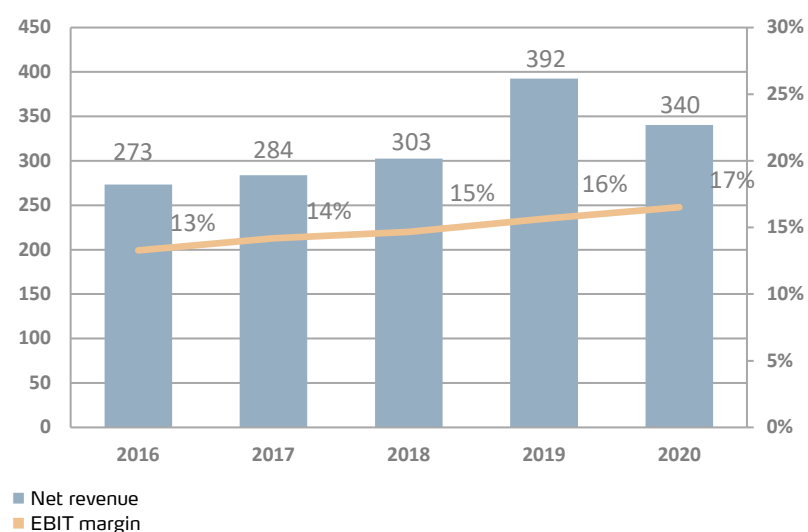
## Consolidated key figures for Kardex Remstar

in EUR million

	2020		2019	+/-%
Bookings	326.9	96.1%	388.6	99.0%
Order backlog (31.12.)	144.9	42.6%	159.8	40.7%
Segment net revenues	340.2	100.0%	392.4	100.0%
EBITDA	61.9	18.2%	66.8	17.0%
Operating result (EBIT)	56.2	16.5%	61.4	15.6%
ROCE	41.2%		45.9%	
Employees (FTE on 31.12.)	1 550		1 610	-3.7%

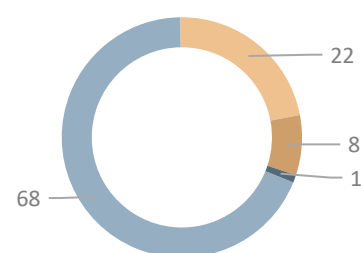
## Net revenue and EBIT margin

in EUR million



## Net revenue by region

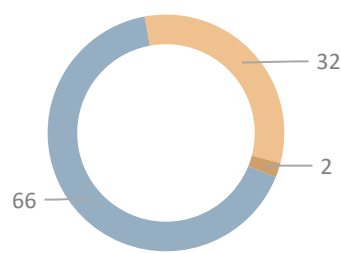
2020 financial year in %



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

## Net revenue by business unit

2020 financial year in %



■ New Business  
 ■ Life Cycle Services  
 ■ OEM

Kardex Remstar customers can be found in a broad range of industries, from highly industrialized through to office environments. Over 50% of the business is currently generated in four major segments.

Segment Name	Revenue Share in 2020
Wholesale / Retail / E-Commerce	17%
Mechanical Engineering	14%
Electronics	12%
Healthcare / Pharmaceuticals / Hospitals	9%
Public Administration / Government	8%
Metal	8%
Automotive / Transportation Equipment	7%
Consumer Goods	5%
Third-Party Logistics / Transportation	3%
Others	17%

The division 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 model consists of two business units – New Business, Life Cycle Service.

### New Business

This business 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, which is described in section 2.6.1.2, is divided into 6 families and is sold to the market either as single product or as part of systems.

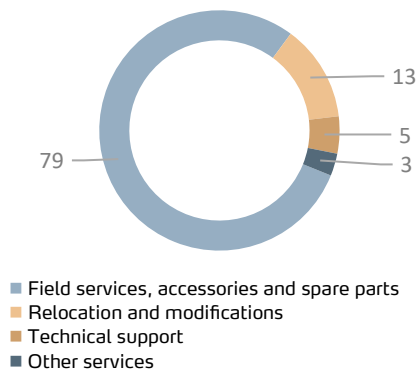
### Life Cycle Service

This business 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 and more towards predictive activities, project-based services, 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. The following exhibit shows the contribution of each service product to Kardex Remstar's net sales.



## Sales split LCS (2020)

in %



### 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
- 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.

### 6.1.2 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), Vertical Buffer Modules (VBM), Software Suite and Life Cycle Services.

The following exhibit shows the product portfolio of Kardex Remstar.



Vertical Buffer Modules



Vertical Lift Modules



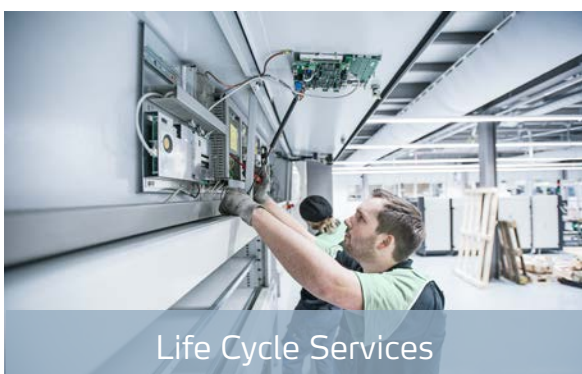
Horizontal Carousel Modules



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
- 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 Division Mlog

### 6.2.1 Introduction

#### Overview

##### Key figures

- Strong market position in Germany
- > 290 FTE
- Close to 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)

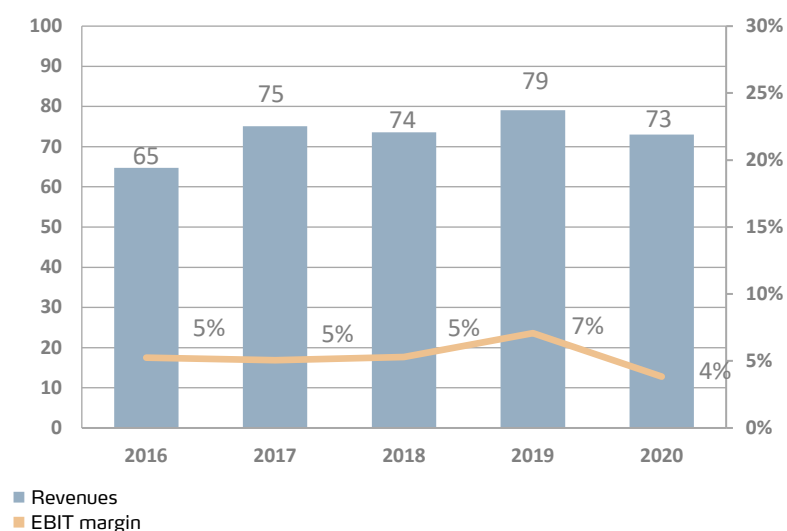


## Consolidated key figures for Kardex Mlog

in EUR million	2020		2019		+/-%
Bookings	90.2	123.6%	64.0	80.9%	40.9%
Order backlog (31.12.)	75.2	103.0%	58.0	73.3%	29.7%
Segment net revenues	73.0	100.0%	79.1	100.0%	-7.7%
EBITDA	4.4	6.0%	6.6	8.3%	-33.3%
Operating result (EBIT)	2.8	3.8%	5.6	7.1%	-50.0%
ROCE	18.1%		33.5%		
Employees (FTE on 31.12.)	286		291		-1.7%

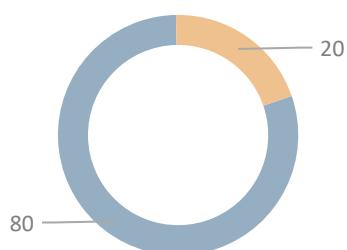
## Revenues and EBIT margin

in EUR million



## Net revenue by region

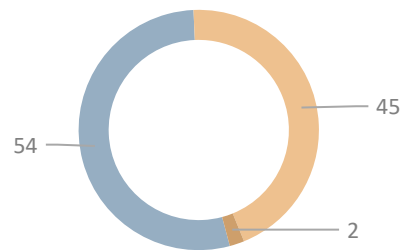
2020 financial year in %



■ Germany  
■ Rest of Europe

## Net revenue by business unit

2020 financial year in %



■ Life Cycle Services  
■ Integrated Subsystems  
■ Products

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.

#### 6.2.2 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 Refurbishment)



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



MSequence



MCompact



MDynamic



MTower

## Products



Stacker Crane Modules



Conveyor Modules



Life Cycle Service (LCS)



Software Suite (MCC)

Mlog's powerful Software Suite (Mlog Control Center - MCC) 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

## 7. Corporate Governance

### 7.1 Board of Directors and Group Management

#### 7.1.1 Board of Directors



f.l.t.r.: Ulrich Jakob Looser, Jakob Bleiker, Andreas Häberli, Philipp Buhofer, Eugen Elmiger, Felix Thöni

Board of Directors	Functions	Committees
<b>Felix Thöni</b> (1959, Swiss citizen) Since 2011	Chairman of the Board	
<b>Ulrich Jakob Looser</b> (1957, Swiss citizen) Since 2012	Vice Chairman of the Board	Chairman Compensation and Nomination Committee, Member Audit Committee
<b>Jakob Bleiker</b> (1957, Swiss citizen) Since 2012	Member	Chairman Audit 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	Member	Member Compensation and Nomination Committee
<b>Andreas Häberli</b> (1968, Swiss citizen) Since 2020	Member	Member Audit Committee



## 7.1.2 Group Management

### Jens Fankhänel

Chief Executive Officer



1965, German citizen

University degree in Electrical Engineering/ Specialization in Automation Engineering and Technical Cybernetics, Germany

#### Since 2016

- CEO of Kardex Holding AG, Zurich, Switzerland

#### 2011–2018

- Head of Kardex Remstar Division, KRM Service AG, Zurich, Switzerland

#### 2008–2010

- Managing Director WDS Region Europe 1, Swisslog AG, Buchs, Switzerland

#### 2005–2008

- Vice President and CEO Hub Central Europe, Dematic GmbH & Co. KG, Offenbach, Germany

#### 2002–2005

- Managing Director, Swisslog Australia, Sydney, Australia

#### 1994–2002

- Senior Consultant/Director, i+o GmbH, Heidelberg, Germany

#### 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 Holding AG, Zurich, Switzerland

#### 2011–2016

- Head of Finance & Controlling on holding level, Kardex Holding AG, Zurich, Switzerland

#### 2001–2011

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

#### 1998–2001

- Head of Finance & Controlling / Controller, 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, KRM Service AG, Zurich, Switzerland

#### **2016–2019**

- Head of New Business Kardex Remstar, KRM Service AG, Zurich, Switzerland

#### **2011–2016**

- Head of Life Cycle Service Kardex Remstar

#### **2008–2011**

- Divisional Head of TGW Group, Wels, Austria

#### **2007–2008**

- Senior VP Strategic Projects, Swisslog Group, Switzerland

#### **1999–2007**

Head of Region/Managing Director, Swisslog Group, Switzerland

#### **1996–1999**

- Project Director, Swisslog Group, Switzerland

#### **1993–1996**

- Head of Sales & Projects, 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, Mlog Logistics GmbH, Neuenstadt, Germany

#### **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

#### **1996–2000**

- Division Manager Systems, Mannesmann Dematic, South Africa

#### **1989–1996**

- Project Manager "overall projects", Mannesmann Dematic, Offenbach, Germany

#### **Other activities**

- None

## 7.2 Extract of the Corporate Governance Report

Kardex is divided into the two divisions (segments) Kardex Remstar and Kardex Mlog.

Kardex is led by the Board of Directors and the Group Management, which consists of CEO Jens Fankhänel, CFO Thomas Reist, Urs Siegenthaler, Head of the Kardex Remstar division and Hans-Jürgen Heitzer, Head of the Kardex Mlog division.

### «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 registered shares of Kardex Holding AG may be purchased by any legal or natural person. Nominee registrations are permitted. The purchasing of shares is subject to the following limitations on nominee registrations:

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 own name and for their own account. 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. It 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 2020, there were 2 192 shareholders entered in the share register. A majority of them had their registered office or domicile in Switzerland. 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 1% 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.

### Duty to make an offer upon change of control

In accordance with § 4 of the company's Articles of Incorporation, a purchaser of Kardex Holding AG shares is only obliged to make a public offer under the terms of article 135 (the opting-up clause) of the Financial Market Infrastructure Act (FMIA) if his holding exceeds 49% of the company's voting stock.

### Statutory auditors

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

## 8. Sustainability

### 8.1 Sustainability as a cornerstone of the business model of Kardex

Sustainability stands for the careful use of resources. At Kardex, the efficient use of resources has always been at the heart of the business model and is thus part of the company DNA. In the field of intralogistics, Kardex solutions significantly shorten long walking distances, reduce space requirements by up to 84% and make optimal use of space volumes. This conserves the scarce resource of land and, in addition, Kardex helps its customers to save energy. That is why we also see sustainability as a great opportunity for the company.

Sustainable action is a matter of course at Kardex and is part of everyday life. In its development work, the company constantly relies on the most modern components with a high degree of efficiency. For its part, its supply chain is working to reduce energy consumption in Kardex production or transport routes. A major step in this regard is the planned opening of the production facility in West Columbia (USA) in 2021 by moving production for the US market closer to customers. Short transport routes within the country instead of long sea transports reduce emissions and help protect the climate. The production facility itself also stands for sustainability. The roof system regulates temperatures on the surface and in the building to save energy. LED lighting controlled by motion sensors also supports the responsible use of energy. These examples show that sustainable action is firmly anchored in business operations.

The aim of this chapter is to present Kardex' understanding of values and its commitment to sustainability transparency.

### 8.2 Focus on internal and external sustainability

As the world's leading provider of intralogistics solutions, Kardex proves that long-term business success is closely linked to fundamental sustainability considerations. Kardex solutions support customers in making better use of their own sustainability potential. That is why one focus of the sustainability report is set on the topic of resource-saving and ergonomic solutions. Here, Kardex also demonstrates the internal implementation of the sustainability concept with an energy-efficient supply chain.

#### 8.2.1 Resource-saving and ergonomic solutions

Classic static racks based on the man-to-goods concept require a lot of space, as storage in width and height is inefficient and thus very quickly limited. Likewise, static solutions very often lead to long walking distances or travel distances with energy-consuming vehicles. Kardex solutions are sustainable compared to a static racking solution in the following areas:

- a) Kardex solutions make optimal use of existing space and room volumes, saving an average of 80-84% of space requirements. This reduces the need for air-conditioned room volume, which directly saves heating, cooling, and lighting costs and reduces CO2 emissions. Also, the need for built-up space is reduced. Our solutions help to balance the economy and the environment, and our customers can make better use of existing buildings and conserve resources.

- b) 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. This reduces physical strain, prevents poor posture, and has a positive impact on the health costs of our customers' employees.
- c) Kardex solutions are of high quality and designed in such a way that they can be kept up to date throughout their entire service life using updates and upgrades. This prevents the solutions from having to be taken out of service prematurely because, for example, new safety standards can no longer be met. The long service life of Kardex solutions conserves resources that would be consumed if they were replaced. Remote diagnostics and, in the future, preventive maintenance will minimize ad hoc service calls and thus travel mileage.

### 8.2.2 Energy-efficient supply chain

Kardex currently has three production plants in Germany where the company's products are manufactured. All plants are subject to the ISO 9001:2000 standard for quality management and also operate an energy management system in accordance with DIN EN ISO 50001:2018, which requires the careful use of resources and includes a concept for waste prevention, reduction, and recycling. The introduction of the energy management system at Kardex' plants has led, among other things, to a significant reduction in energy consumption per ton of steel processed over the past few years. In addition, environmental management has been certified in accordance with DIN EN ISO 14001:2015. Kardex thus complies with globally recognized standards.

Regular audits ensure that the standards, norms, and guidelines for manufacturing companies are adhered to.

## 8.3 The principles applied

### 8.3.1 Ethical business management

The Kardex Code of Conduct ([www.kardex.com](http://www.kardex.com)) sets out binding general principles of ethical behavior for the Board of Directors, management, and all employees of Kardex, is implemented by a mandatory training for new employees and regularly recalled through training sessions. The Kardex Code of Conduct applies to all divisions, subsidiaries, and fields of activity, and compliance is also required of affiliated companies and business partners. The underlying values are expressed in five basic principles:

- We treat our employees fairly and with respect
- Customer benefit is our top priority
- We want to deliver sustainable performance with integrity
- Our goal is to be a trustworthy, fair, and respectful business partner
- We strive to be a responsible corporate citizen

The Kardex Code of Conduct underscores Kardex' commitment to meeting the expectations of its stakeholders as a responsible corporate citizen, and it sets out the fundamental principles and rules for ethical business behavior. Specific regulations, guidelines, and manuals complement the principles set out in the Kardex Code of Conduct.

Kardex does not compromise on compliance with the Kardex Code of Conduct and does not tolerate any violations of the Code of Conduct. Possible misconduct can be reported anonymously to a central office and whistleblowers are granted protection against retaliation or disciplinary consequences.

Kardex respects the personal rights of its employees, customers, and other stakeholders. Data protection and information security have a high priority in the company. Kardex is committed to fair competition and does not tolerate any form of bribery or corruption. The company expects that business partner also obey the law, comply with the principles of ethical business conduct and observe rules, regulations, and laws regarding personnel, health, safety, environmental protection, and management systems.

Kardex sees itself as a company contributing to positive social, environmental, and cultural developments. Kardex strives to ensure that activities within its sphere of influence do not harm the fundamental human rights listed in the United Nations Universal Declaration of Human Rights and the Core Convention of the International World Labor Organization, either directly or through business relationships with third parties.

### 8.3.2 Employees

Kardex treats its employees fairly and with respect and is committed to protecting them from unfair, unethical, or unhealthy working conditions. Harassment or discrimination will not be tolerated. Kardex creates an inclusive work environment in which all employees can contribute. Diversity plays a crucial role in Kardex' success, which is why talented employees with different backgrounds and open minds are recruited and supported in their further training.

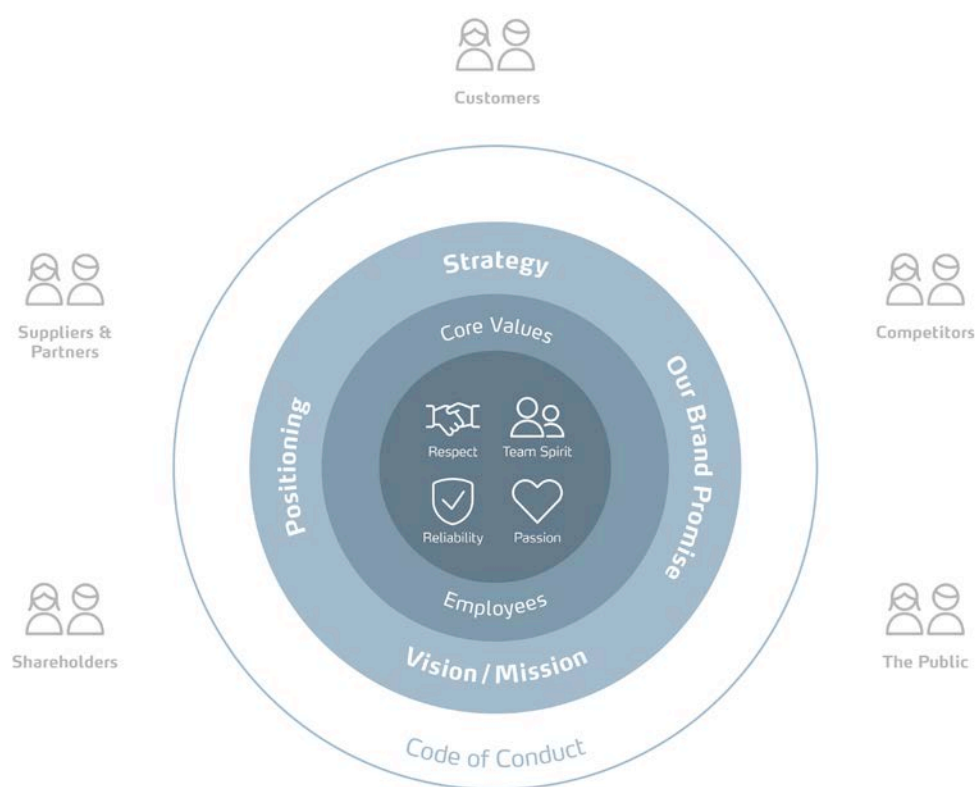
More detailed information regarding the focus areas in dealing with its employees can be found in the Kardex Code of Conduct ([www.kardex.com](http://www.kardex.com)).



### 8.3.3 Corporate culture

#### Guiding Principles

Kardex strives to create an environment where positive spirit, enthusiasm, and identification can flourish. With the Guiding Principles and the core values "Respect", "Team Spirit", "Reliability" and "Passion", Kardex has defined the cornerstones of its corporate culture and provides a clear code of conduct for all activities. The core values serve as guidelines for all employees in their daily dealings with colleagues. The Guiding Principles provide orientation on "who we are, how we want to be seen, and what we do to achieve this". Living the Guiding Principles is our key to sustainable success.



#### Brand Promise

Kardex has also defined how the company should be perceived from the outside and developed the outward-looking Brand Promise "Straightforward", "Innovative" and "Fair". The Brand Promise serves as a guide in dealing with customers and in setting priorities in daily working life. Customer benefits are at the center of our daily activities.

#### 8.3.4 Human Resources Development

Demographic change is leading to a shrinking and aging population mainly in European countries and is drying up the labor market. Kardex, as a medium-sized company, is also often in competition with larger international companies, and therefore, ensuring low staff turnover and the battle for talent are a permanent challenge for Kardex.

For many years, Kardex has been working hard to become an attractive and preferred employer for existing and future employees, thus strengthening its competitive position in the labor market. In addition to remuneration in line with the market, a wide range of personnel development tools has been implemented and fringe benefits continuously expanded. At the heart of personnel development is a continuous feedback dialog process with the resulting development plans in line with the employees' personal goals and the company's objectives. In parallel, possible development steps within Kardex are identified as part of talent development and succession planning. The feedback dialog process and the identified development steps serve as basis for the training and development programs jointly defined between employees and their superiors. Kardex' own Academy has a wide range of internal and external training courses to provide optimum support for these training and development programs.

Kardex offers a dual career model for managers and for experts, which is also open to a change of career path. The Kardex Leadership Framework defines the leadership principles as applied at Kardex and is mainly based on the intent-based leadership concept. These leadership principles are highlighted, discussed, and trained in regular leadership meetings.

All Kardex employees are surveyed anonymously every two years about their satisfaction and can make suggestions for improvement. The results of this survey are discussed in all teams and improvement measures are jointly developed and implemented. Kardex has a global employee representative body that represents Kardex' geographical regions and functions in a balanced manner. The task of the employee representatives is to feel the pulse of the employees as an independent body and to share impressions and suggestions for improvement with Group Management at least twice a year.

#### 8.3.5 Occupational safety and health protection

Kardex attaches great importance to the preventive avoidance of risks to protect its employees. Through regular audits, Kardex ensures that the applicable standards and guidelines on workplace safety are complied with.

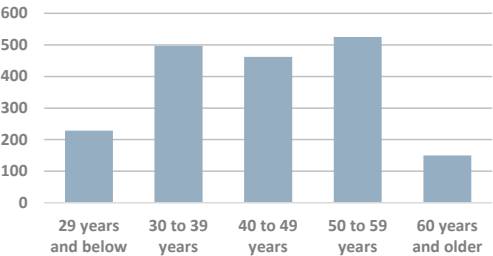
Risks to the safety and health of employees are regularly identified, assessed and appropriate countermeasures developed. They are communicated transparently within the company. Through regular training courses, Kardex ensures that effective occupational health and safety is practiced within the company and that employees have the necessary technical skills and a high level of safety awareness. The management system for occupational health and safety is continuously reviewed, expanded, and improved.



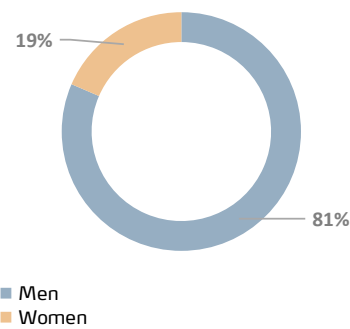
8.3.6 Diversity

Kardex is committed to diversity and consciously creates equal opportunities in the recruitment process, in which candidate lists must be heterogeneously represented in terms of age, origin, and gender. The selection process is based exclusively on professional and personal qualifications. Equality of opportunity is also deliberately created in the internal promotion of talent and preference is not given to individual groups of people.

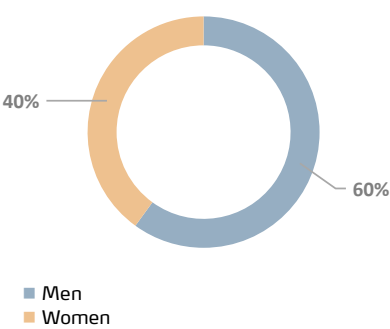
Employees of Kardex



Employees of Kardex



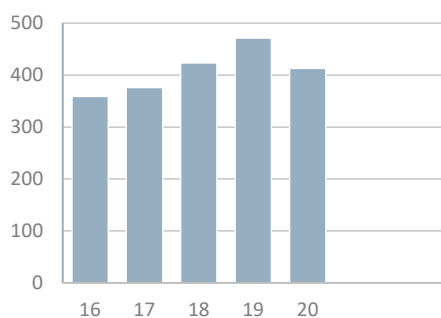
Administration of Kardex



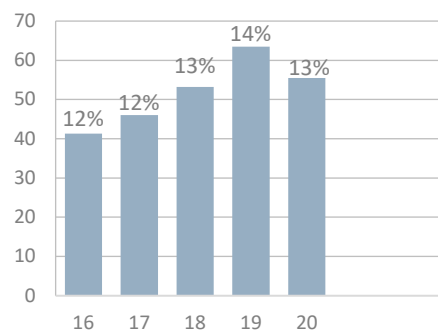
# Key figures and share information

## 1. Key figures at a glance

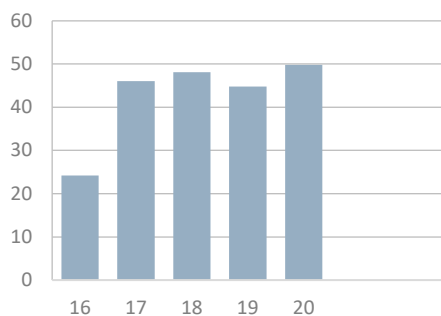
### Net revenues in EUR million



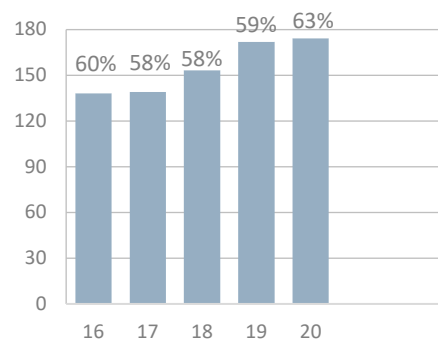
### Operating result (EBIT) and EBIT margin in EUR million and in %



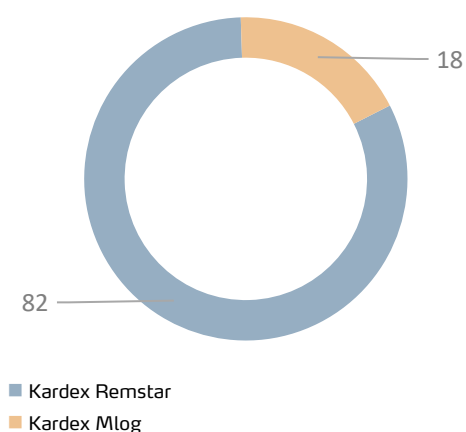
### Net cash flow from operating activities in EUR million



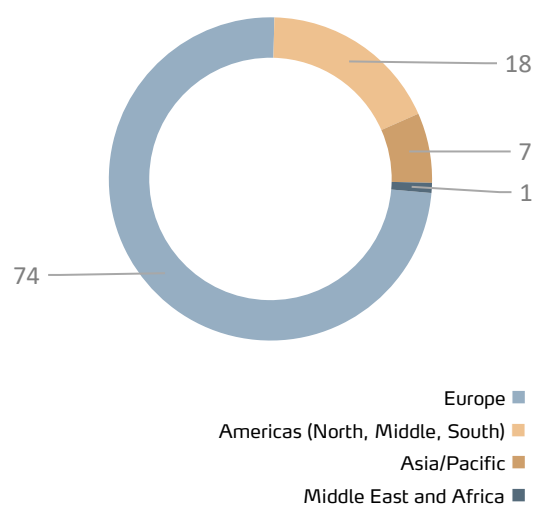
### Equity and equity ratio in EUR million and in %



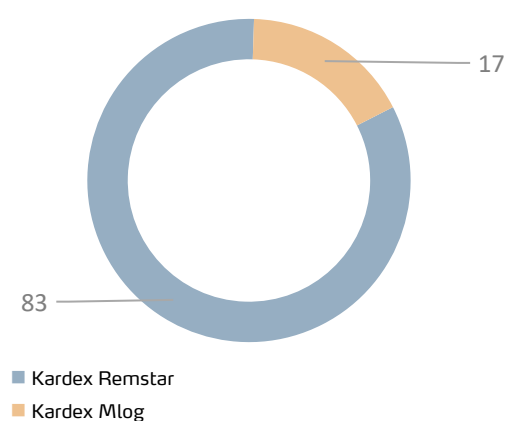
**Net revenues by segment**  
2020 financial year in %



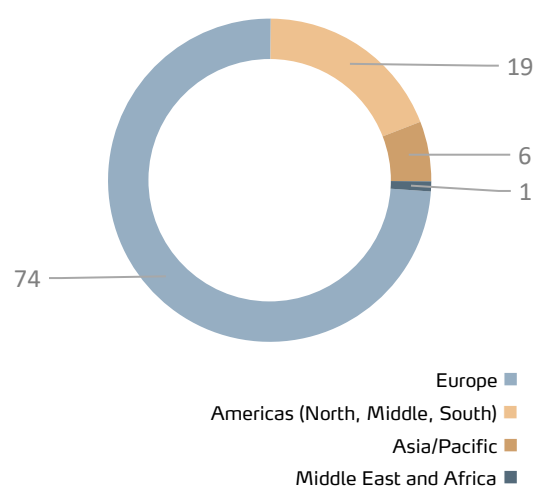
**Net revenues by region**  
2020 financial year in %



**Net revenues by segment**  
2019 financial year in %



**Net revenues by region**  
2019 financial year in %



## 2. Financial highlights 2020

### Key figures

in EUR million

1.1.-31.12.	2020		2019	+/-%	
Bookings	416.8	100.9%	452.4	96.0%	-7.9%
Order backlog (31.12.)	220.2	53.3%	217.8	46.2%	1.1%
Net revenues	412.9	100.0%	471.2	100.0%	-12.4%
Gross profit	153.0	37.1%	171.3	36.4%	-10.7%
OPEX	97.5	23.6%	107.8	22.9%	-9.6%
EBITDA	62.6	15.2%	70.2	14.9%	-10.8%
Operating result (EBIT)	55.5	13.4%	63.5	13.5%	-12.6%
Result for the period (net profit)	40.7	9.9%	44.9	9.5%	-9.4%
Net cash flow from operating activities	49.8		44.8		11.2%
Free cash flow	25.2		30.8		-18.2%
ROCE	43.7%		51.2%		

	31.12.2020		31.12.2019		+/- %
Net working capital	67.9		77.3		-12.2%
Net cash	122.3		133.6		-8.5%
Equity/Equity ratio	174.3	62.9%	172.0	59.4%	1.3%
Employees (FTE)	1 860		1 913		-2.8%

	2020	2019	+/-%
Distribution per share (CHF)	4.00	4.50	-11.1%

### 3. Consolidated balance sheet

in EUR million

	31.12.2020	31.12.2019
Property, plant and equipment	50.7	41.2
Intangible assets	6.0	4.1
Financial assets	8.1	6.6
<b>Non-current assets</b>	<b>64.8</b>	<b>51.9</b>
Inventories and work in progress	14.8	19.2
Trade accounts receivable	49.0	65.4
Other receivables	22.9	15.4
Prepaid expenses	3.4	4.3
Cash and cash equivalents	122.4	133.6
<b>Current assets</b>	<b>212.5</b>	<b>237.9</b>
<b>Assets</b>	<b>277.3</b>	<b>289.8</b>
Share capital	2.5	2.5
Capital reserves	31.4	31.3
Retained earnings and translation differences	141.9	138.7
Treasury shares	-1.9	-1.0
<b>Equity before minorities</b>	<b>173.9</b>	<b>171.5</b>
Minority interests	0.4	0.5
<b>Equity</b>	<b>174.3</b>	<b>172.0</b>
Non-current provisions	21.5	20.6
<b>Non-current liabilities</b>	<b>21.5</b>	<b>20.6</b>
Trade accounts payable	12.1	17.3
Current provisions	9.4	6.0
Accruals	44.3	54.7
Other current liabilities	15.6	19.2
<b>Current liabilities</b>	<b>81.5</b>	<b>97.2</b>
<b>Liabilities</b>	<b>103.0</b>	<b>117.8</b>
<b>Equity and liabilities</b>	<b>277.3</b>	<b>289.8</b>

## 4. Information on Kardex share

### Share capital and capital structure

	2020	2019	2018	2017	2016
Par value per share (CHF)	0.45	0.45	4.05	7.35	10.35
Total registered shares	7 730 000	7 730 000	7 730 000	7 730 000	7 730 000
Number of treasury shares	19 560	11 640	15 149	16 700	-
Number of dividend-bearing shares	7 710 440	7 718 360	7 714 851	7 713 300	7 730 000
Registered capital (CHF 1 000)	3 479	3 479	31 307	56 816	80 006
Total voting rights	7 710 440	7 718 360	7 714 851	7 713 300	7 730 000

### Key stock exchange figures per share

CHF	2020	2019	2018	2017	2016
Share price high	197.60	178.40	120.00	99.90	82.00
Share price low	92.30	112.20	94.20	57.80	40.20
Closing rate	193.60	163.00	119.60	95.25	78.00
Average volume per trading day (no. of shares)	23 664	17 167	14 415	12 596	16 528
Market capitalization - CHF million (31.12.)	1 496.53	1 259.99	924.51	736.28	602.94

### Key figures per share

CHF	2020	2019	2018	2017	2016
Earnings per share (EPS) <sup>1</sup> - basic	5.65	6.39	4.59	4.34	3.94
Earnings per share (EPS) <sup>1</sup> - diluted	5.65	6.39	4.59	4.34	3.94
Price earning ratio (closing rate)	34.35	25.54	26.12	21.95	19.79
Dividend <sup>2</sup>	4.00	4.50	-	-	-
Reduction of nominal value	-	-	3.60	3.30	3.00
Equity	24.47	24.23	21.17	19.18	18.10

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

<sup>2</sup> 2020: Distribution of a dividend as proposed to the Annual General Meeting to be held on 15 April 2021

The registered shares of Kardex AG are traded by the Swiss Reporting Standard of SIX Swiss Exchange in Zurich, Switzerland. They are contained in the SPI (Swiss Performance Index).

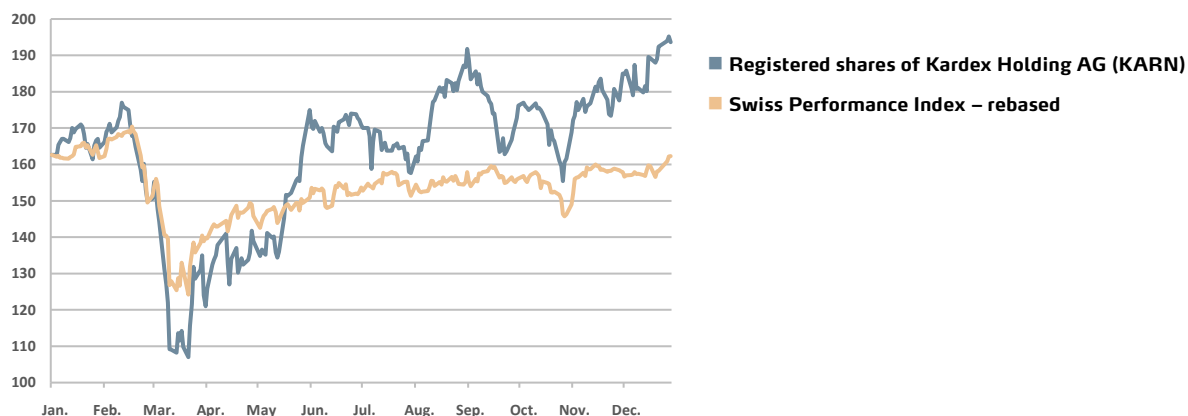
Stock exchange symbol: KARN; Swiss securities number: 10083728; ISIN number: CH0100837282; Bloomberg: KARN SW Equity; Reuters: KARN.S.

Current prices can be seen at [www.kardex.com](http://www.kardex.com).

## Share price performance

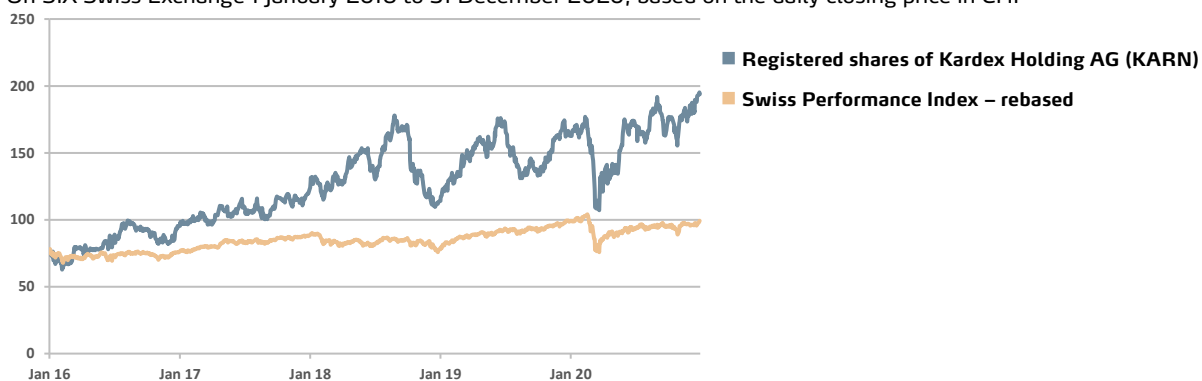
### Kardex Holding AG share

On SIX Swiss Exchange 1 January to 31 December 2020, based on the daily closing price in CHF



The value of the Kardex share increased by 18.8% from CHF 163.00 to CHF 193.60 in 2020. Kardex paid a dividend of CHF 4.50 per share in April 2020. The Total Shareholder Return (TSR) for the year was 21.5% (47.3%).

On SIX Swiss Exchange 1 January 2016 to 31 December 2020, based on the daily closing price in CHF



## Shareholder structure

As at 31 December 2020, there were 2 192 shareholders (2 095) entered in the share register. The following shareholders held 3% or more of the outstanding share capital of Kardex Holding AG at year end:

	31.12.2020	31.12.2019
BURU Holding AG and Philipp Buhofer	23.0%	23.3%
Alantra Partners S.A.	6.3%	8.1%
Invesco Ltd.	5.0%	5.1%
Kabouter Management, LLC	4.8%	
Kempen Capital Management N.V.	3.5%	

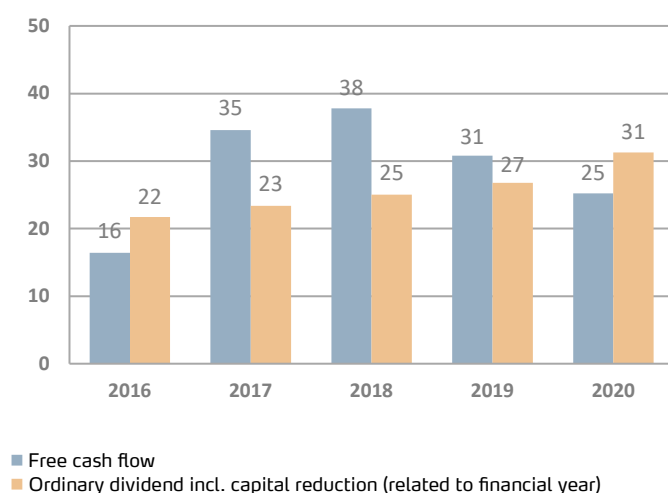
## 5. Attractive dividend policy

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





# Industry outlook

## 1. Intralogistics overview

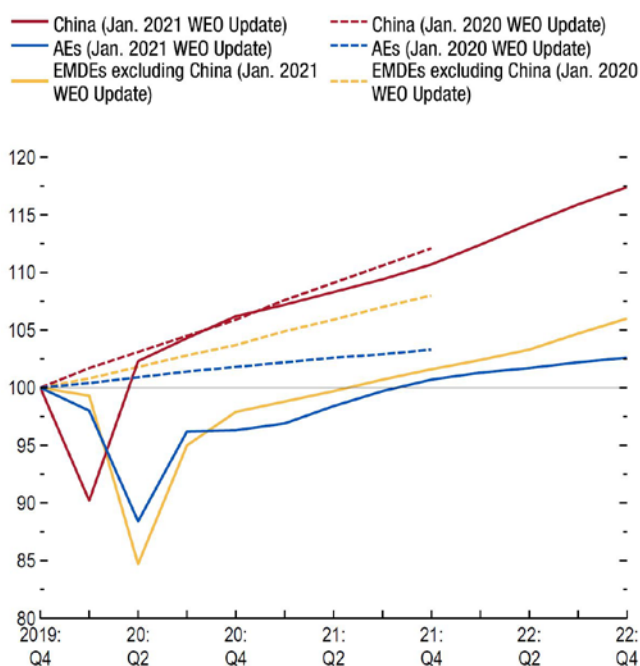
Modern, smooth intralogistics has a major impact on the productivity of companies in any industry segment and of any size. Whatever goods are stored, a reliable and efficient storage and retrieval system significantly reduces human resource requirements and logistics costs. Excellent logistics processes 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.

## 2. Global trends and drivers impacting intralogistics

### 2.1 Sound global demand

The global economic activity is expected to rebound from the near collapse in 2020, with a projected worldwide growth of 5.5% in 2021, and 4.2% in 2022 (according to the IMF World Economic Outlook as per January 2021). However, exceptional uncertainty surrounds the baseline projections, with renewed waves and new variants of COVID-19 which pose concerns for the outlook. The growth in the emerging markets and developing economies are expected to outpace the growth in the advanced economies by about 2%, which bodes well for Kardex whose strategy is geared up to profiting from geographical expansion.

### Real GDP growth outlook (in %)



Source: IMF staff estimates.

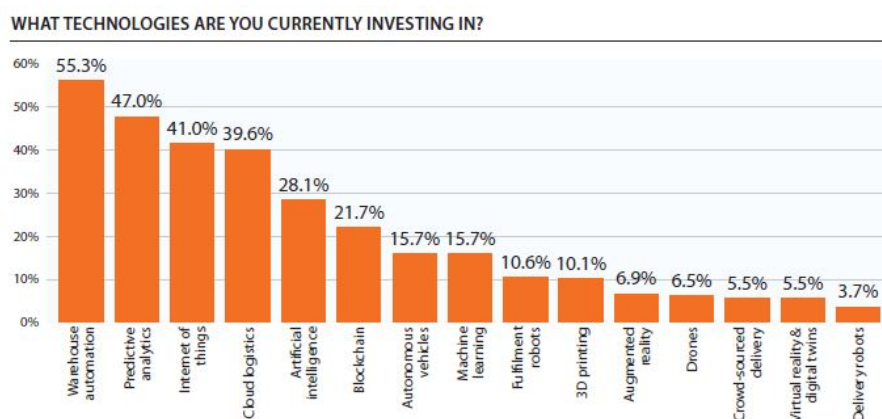
Note: AEs = advanced economies; EMDEs = emerging market and developing economies; WEO = World Economic Outlook.

The overall intralogistics market moves in line, albeit with a time lag with the global economy. This cyclicity is induced in the industry by its end users who, in line with any down-swing, postpone or cancel their investment activities but on the other hand have to invest extensively in any given economic up-swing. This cyclicity and the associated time lags were also observable during the great financial crisis in 2008/2009 and its subsequent economic recovery. The time lag between economic recovery and increase in intralogistics orders and shipments is approximately 9–12 months and is driven by factors such as capital intensity of the installed solutions and dependency of new orders on capacity expansion. Although Kardex has been impacted by this cyclicity in the past, the increased revenues generated through after-sales services, which in 2020 accounted for over 30% of total revenues, substantially reduced the impact of economic cycles on the company. During the pandemic in 2020 the after-sales service proved to be a stabilizing pillar in terms of revenues and margins.

## 2.2 Growing level of automation

The shortage of human resources combined with the learnings of the COVID-19 pandemic will accelerate the future level of supply chain automation. It is becoming increasingly apparent that traditional supply chain models are ripe for disruption. Re-shoring of manufacturing, a faster than ever booming e-commerce industry (see below) and the adoption of robotics will have a long-term positive effect on the warehouse automation.

Based on a 2019 survey of supply chain professionals in retail, manufacturing and logistics fields, warehouse automation is already the supply chain technology with the highest investments (55%).



Source: SUPPLY CHAIN HOT TRENDS 2019, [www.eft.com](http://www.eft.com) (EyeForTransport)

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 handle big swings in demand. 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 Increase in e-commerce

More and more companies in the B2B and the B2C business are adapting to e-commerce resulting in an exploding number of goods which need to be stored and picked and ultimately forces these companies to optimize their supply chain and logistics. E-commerce is setting new standards, with tight delivery deadlines and first-right service levels. Many companies will have to change their overall supply chain strategy; instead of deliveries from centralized distribution centers, many smaller, decentralized distribution hubs must be available to ensure a quick or same-day shipping. Clear order processes and competitive returns procedures (reverse logistics) are absolutely essential for success in the e-business. Through the implementation of new, affordable, and flexible automated storage and retrieval systems, reverse logistics process can be simplified and managed at lower cost.

## 2.4 Industry 4.0

The broad penetration and application of modern information technology creates a network where smart machines can share information with one another and can work independently or together with humans, making modern production and distribution more flexible and efficient. Smart machines are able to collect data, analyze them and take decisions or provide advice upon them in a decentralized way. Industry 4.0 drives the change from central to embedded intelligence and this leads to fundamentally new requirements to the intralogistics core technology and product ranges.

All these changes will affect total supply chains, taking intralogistics to the next level. Smart businesses will need smart products and solutions, where real-time data will be shared among machines, robots, employees, suppliers and customers to enhance the productivity, reliability and ultimately profitability.

## 2.5 Cloud computing

The provision of hosted services over the internet enables companies, organizations and private individuals to consume shared computing resources (e.g. virtual machines, servers, storage or applications) as a utility rather than having to build and maintain local servers. Cloud platforms are enabling new business models and services, such as Software as a Service (SaaS), also known as on-demand software.

Decentralized and cloud-based supply chain software systems make it easier to gather, monitor, analyze, and distribute data across the entire value chain. It helps in improving inventory management, mobile field services, and mobile sales, along with compatibility with other mobile devices. Besides eliminating the cost for hardware acquisition, installation, maintenance and even IT staff, organizations can benefit from automatic software updates over the air, accessibility from any location and cross device compatibility. These are new revenue opportunities for intralogistics providers, uplifting after-sales services into a new dimension. This will not only generate more predictable and stable revenues but also help increase customer efficiency and loyalty.

## 2.6 Ageing 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.

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.

## 2.7 After-sales service and support

Economic constraints resulting in pro-longued utilization of assets increase the importance of improved product or system related services (which include support, refurbishment, maintenance, repair and engineering services. Due to increasing competition, intralogistics companies need to differentiate from low-cost providers from emerging markets and are therefore focusing on providing consultative value added services to their customers after the normal sales cycle.

With the implementation of new technologies under the “Industry 4.0” framework, intralogistics providers will be able to monitor their installed machines and systems in real time and provide valuable operational efficiency insights to their customers. This helps customers to proactively identify and address potential technical or operational problems and increase uptime of their installed base. The machine downtime can drastically be reduced as customers are enabled to order repair tasks or replacement of critical parts before shut-downs of the installations occur. In addition, manufacturers can use predictive methods to define correct spart levels and offer maintenance-per-use packages for their customers.

## 2.8 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.

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 fulfil online orders with greater efficiency and substantially reduced delivery times.

# Competitive landscape

## 1. Competitors

Overall, Kardex competes with many large and mid-size companies which are operating businesses similar to one or both divisions of Kardex. It is important to note that Kardex is not competing as a whole because it operates with two independent entrepreneurially managed divisions.

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.

The following table lists various peers (direct competitors) of Kardex by division.

Kardex Remstar	Kardex Mlog
Modula S.p.A.	SSI Schäfer Fritz Schäfer GmbH
Hänel GmbH & Co. KG	Dematic/HK Systems (Kion Group)
SSI Schäfer Fritz Schäfer GmbH	Swisslog (KUKA Group)
SencorpWhite	KNAPP AG
Dexion (Constructor Group AS)	viastore SYSTEMS GmbH
EffiMat Storage Technology A/S	LTW Intralogistics GmbH
Electroclass	Stöcklin Logistik AG
	Vanderlande Industries (Toyota Industries Corp.)
	Körber AG
	Gebhardt Intralogistics Group

The majority of Kardex Mlog's peer companies is held privately or is a division of a larger group.

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