

Körber Supply Chain

Master Class Series

Today's Class:
Adding automation to improve
safety and increase productivity



Speakers



Thomas Goldsby

Professor

James A. Haslam, II Chair of Logistics
The University of Tennessee Knoxville



Dr. Kerstin Höfle

VP – Portfolio & Innovation Management
Körber Supply Chain

Supply Chain Master Class: Workforce Efficiencies & Safety

Why are we here? What are we trying to accomplish?

Class Schedule:

- September 8: Going beyond picking: How can voice create efficiencies
- September 10: Digital Twins: Stimulating efficiencies in your warehouse
- September 15: Hands-free warehouses: How voice and vision improve safety
- September 17: How robots can increase safety in your warehouse
- September 22: Adding automation to improve safety and increase productivity

Master Class Series – On-Demand

- *Addressing Labor Challenges*
- *Cold Storage Trends*
- *Warehouse Technology Excellence*

Housekeeping



All phone lines are muted

Recording of today's class and slides will be emailed to you within 48 hours

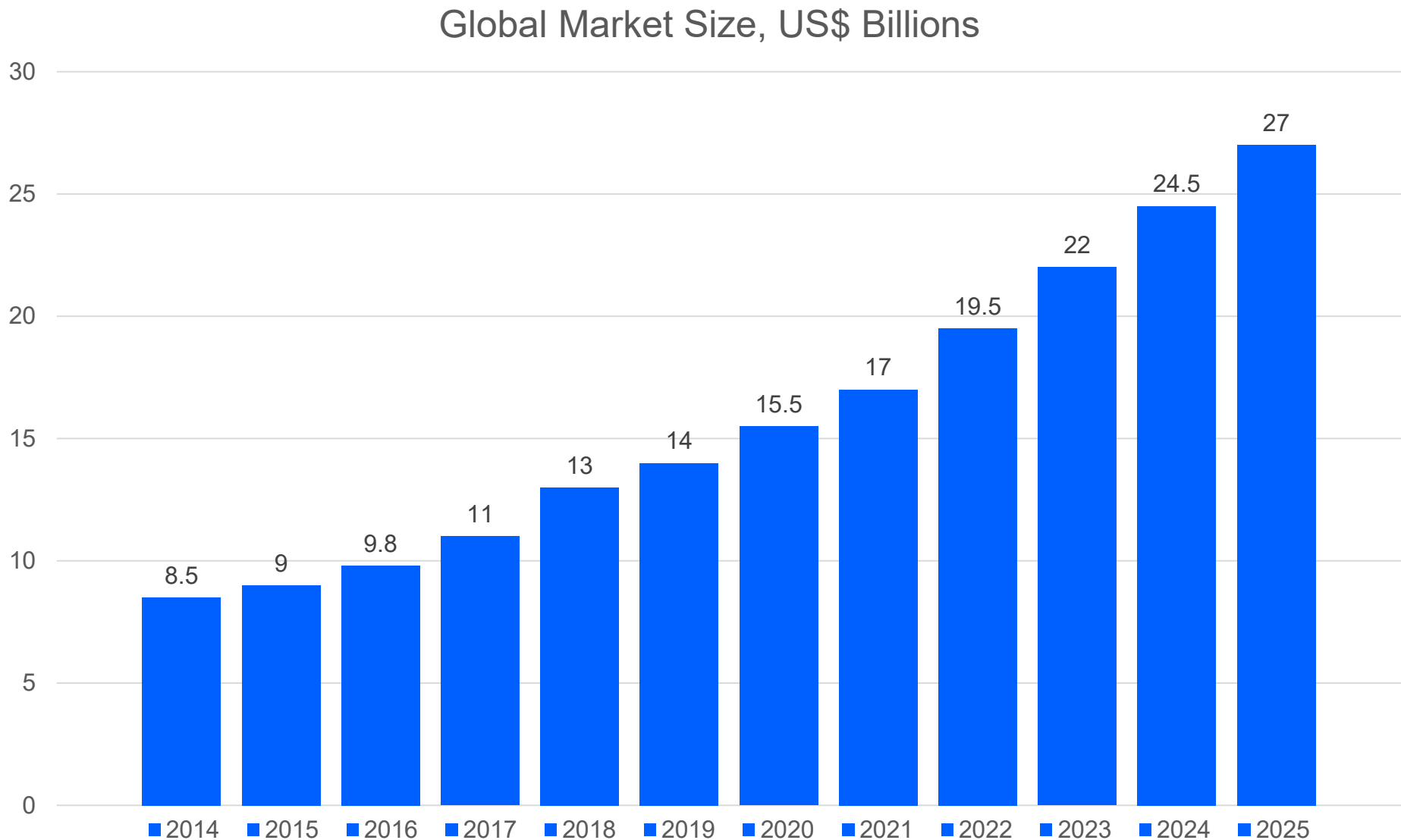
Questions:

- Ask questions during today's class in the GoToWebinar Questions window
- Questions will be addressed at the end of today's class or we will follow up with questions via email after class

Handout: Warehouse Automation and Labor: Friend or Foe?

Poll Question: What is the most promising way automation can assist worker's health and safety?

Surging Growth of Warehouse Automation



An Increasingly Crowded Space

More than 100 start-ups operating in this space, along with established giants

AGV/AMR, ASRS, and Picking Systems to have the highest share of the warehouse automation market in 2025

E-commerce fulfillment is the biggest factor driving the adoption of warehouse automation technologies

High warehouse rents, shortage of skilled warehouse staff and increasing staff costs are driving even higher adoption

Körber Supply Chain

**Master
Class
Series**

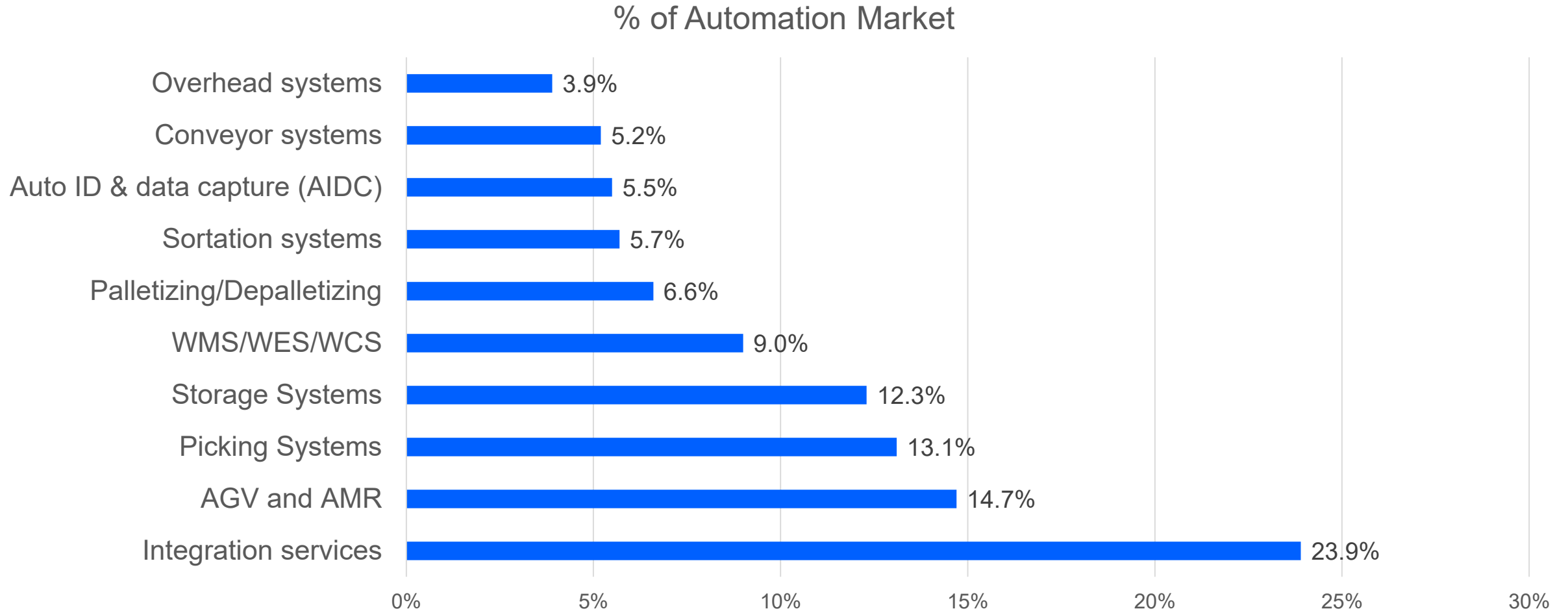
Source: LogisticsIQ (June 2020)



22 September 2020

6

Anticipated Market Segments, 2025



Warehouse Automation To Improve Safety And Increase Productivity



Warehouse automation to improve safety and increase productivity

Directly support Workers

- **Ergonomics**
 - Properly designed workstations
 - Ergonomic heights
 - Exoskeletons
- **Health**
 - Conscious distancing (→ COVID)

(Fully) Automate processes

- **Complete Warehouse Automation**
- **Repetitive tasks**
 - Order processing
 - Travelling
- **Extreme working conditions**
 - MHE for Deep Freeze
- **Digitalization**

Safety

Productivity

Properly Designed Workstation

Ergonomics & Health



Körber Supply Chain

**Master
Class
Series**

Ergonomically designed workstations

- Protect the employee's health
- Are flexible and can be adjusted in height
- Consider limits in lifting weights
- Adjust lighting conditions
- Automatically configure when the worker logs into the system and adapts to the worker's specific requirements (e.g. height)
- Additionally, a structured user guidance improves quality through less errors

Further Technology Trends

Ergonomics & Health



Exoskeletons

- Two main types of exoskeletons
 - Passive, which don't have motors or actuators: can help support the wearer's body and redistribute weight and physical stress
 - Powered: are typically used to amp up a worker's physical strength, allowing them to move or carry heavier weights (up to 15 pounds of lift assistance)
- Can be used as an alternative for fully automated solutions and can also help aging worker continue to perform labor-intensive tasks
- The largest benefit is to decrease worker injuries and reduce healthcare and disability costs
- “Staff are fitter after a working day”

Körber Supply Chain

**Master
Class
Series**

Sources: <https://hexus.net/ce/news/general/91451-panasonic-assist-robot-exoskeletons-demoed-video/>;
<https://www.theverge.com/2017/5/15/15640176/exoskeleton-warehouse-lifting-lowes-virginia-tech>;
<https://www.zdnet.com/article/robotic-exoskeletons-coming-to-a-factory-warehouse-or-army-near-you-soon/>;
<https://www.mhlnews.com/technology-automation/article/22054332/exoskeletons-help-take-a-load-off-for-warehouse-workers>;
<https://www.robotics.org/blog-article.cfm/What-are-the-Benefits-of-Exoskeletons-to-the-Supply-Chain-Industry/206>

Conscious Distancing

Ergonomics & Health



Logistics automation providers add social distancing features to robots, software

As states consider reopening, technology keeps warehouse workers separated to handle booming e-commerce orders.



Ben Ames

No Comments May 15, 2020

As portions of the nation prepare to re-open businesses after a lengthy coronavirus lockdown, some logistics technology providers say their platforms offer methods for preserving the social distancing practices that can slow the spread of Covid-19 disease.

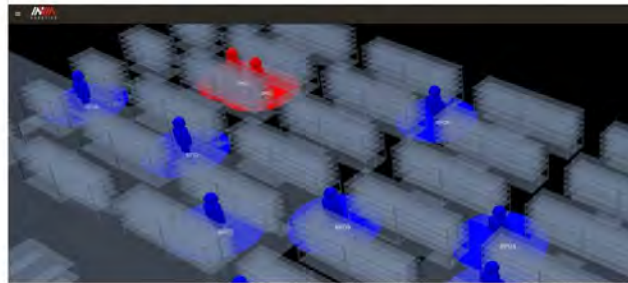
Warehouse automation vendor **inVia Robotics** said **Wednesday** it has added social distancing features to the inVia Logic software and inVia PickMate user tool that are the foundations of its e-commerce automation solution.

Körber Supply Chain

**Master
Class
Series**

inVia Robotics
@inviarobotics

We're using **#AI** and **#robots** to help keep warehouse workers safe while **#ecommerce** businesses keep pace with more online orders



inVia Robotics Adds Warehouse Social Distancing Features to inVia Logic ...
/PRNewswire/ -- inVia Robotics, the provider of the next generation of warehouse automation solutions for e-commerce businesses, today ...
prnewswire.com

6:19 PM · May 13, 2020

2 See inVia Robotics's other Tweets



Putting the Worker First

As companies look to re-open their operations or enhance their social distancing protocols, ProGlove has added a new Proximity feature to the Insight Mobile app that works as a standalone application on a smart phone or in conjunction with MARK hands-free wearable scanners.



ProGlove Insight Mobile Proximity is a free application that helps businesses in warehousing, logistics, and manufacturing to adhere to physical distancing measures and adapt their operations with worker safety top of mind.

Workers receive audio signals on their MARK distance from other distancing measures Proximity is meant to be recommended by go the **CDC** and **Robert**

Infektionsschutz im Lager: Smarte Westen überwachen Mindestabstand
Infection protection in the warehouse: Smart vests monitor minimum distance



Sources: <https://www.dcvelocity.com/articles/46048-logistics-automation-providers-add-social-distancing-features-to-robots-software>;
<https://www.proglove.com/>;
<https://logistra.de/news/nfz-fuhrpark-lagerlogistik-intralogistik-infektionsschutz-im-lager-smarte-westen-ueberwachen-mindestabstand-52303.html>

Conscious Distancing

Ergonomics & Health



AUTOMATISIERUNG IN DER PRODUKTION 15. MAI 2020 VON MARTIN CIUPEK

Corona: Roboter sorgen für die nötige Distanz

Roboter und Automatisierung gewinnen in Zeiten von Lockdown und Kontaktverboten in Produktionsbetrieben verstärkt an Bedeutung – sowohl da, wo noch viel per Hand erledigt wird, als auch dort, wo noch viel per Hand erledigt wird.

Corona: robots provide the necessary distance
Robots and automation are becoming increasingly important in times of lockdown and contact avoidance in production plants - both where they are already installed and where much is still done manually.



2020/06/11

Körber Supply Chain Launches Solution for Supply Chain Resiliency and Safety in Light of COVID-19

More products, suppliers, distribution channels and heightening consumer expectations already make supply chains more complex by the day. Combine this with supply chain continuity in light of the recent pandemic, this complexity increases exponentially.



In line with this, the Business Area Supply Chain has announced the availability of its Contact Tracer; a software solution to mitigate and handle the impact of coronavirus in distribution operations. Contact Tracer tracks the locations of people, devices, orders and the corresponding use of equipment throughout the warehouse – protecting workers and operations.

Körber Supply Chain

**Master
Class
Series**

How workplace design and automation can help to cope with COVID-19

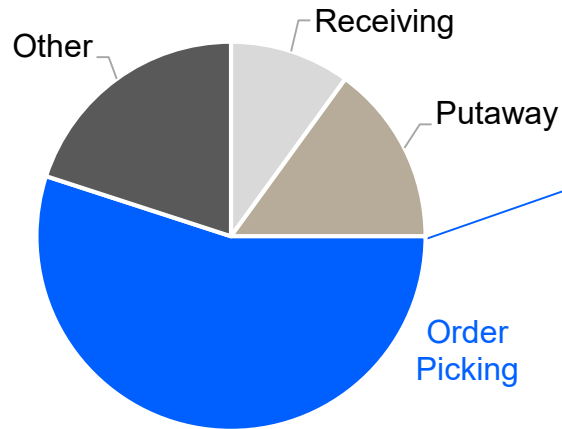
- New workplace design
 - Distance & protective walls, floor visualizations,...
- Adaptation of warehouse design and use of new technologies
 - Sensors & software to support workers in keeping the distance
 - Mobile robots & other automation to reduce human traffic
- Changed picking strategy
 - Reduce number of touches by different people
 - Optimized picking route calculation to ensure the distance rules

Where To Start? Focus On The Most Time-Consuming Activities

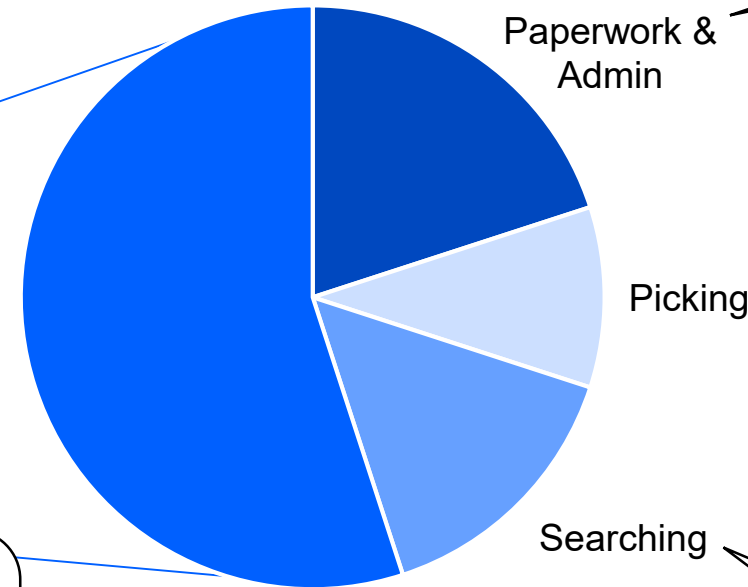


Warehouse Automation To Increase Productivity

Share of **operational costs**
in a warehouse



Breakdown of **order picking** time



- RF based picking
- Voice Picking

- A-frames
- Order Release modules
- Automated Layer Picking
- Goods-to-Robot

- Pick-to-Light
- Pick-by-glass
- AMR supported picking

- AI based Smart slotting
- Path-/task optimization
- Zone-based picking
- AMR supported picking
- Goods to Person

Automation Of Travelling & Searching

Warehouse Automation To Increase Productivity



Körber Supply Chain

**Master
Class
Series**



- Automation covers the basic workload and people can be added to deal with peaks
 - Voice picking or pick-by-light/glass solutions can help workers to reduce searching but also paperwork (example: with Körber Voice Picking)
 - Software-based solutions like AI based slotting or path/task optimization also help to reduce travel times
 - Same do AMRs that are supporting the picker
- Combining people and automation will give a much **better ROI**, especially in order picking situation with higher peaks

Automation Of Picking

Warehouse Automation To Increase Productivity



**Conventional
Picking**

75 to 150
orderlines/hr



**Person & Robot
to Good**

100 to 200
orderlines/hr



**Zone-based
Picking**

100 to 250
orderlines/hr



Good to Person

200 to 800
orderlines/hr



Good to Robot

200 to 800
orderlines/hr

Körber Supply Chain

**Master
Class
Series**

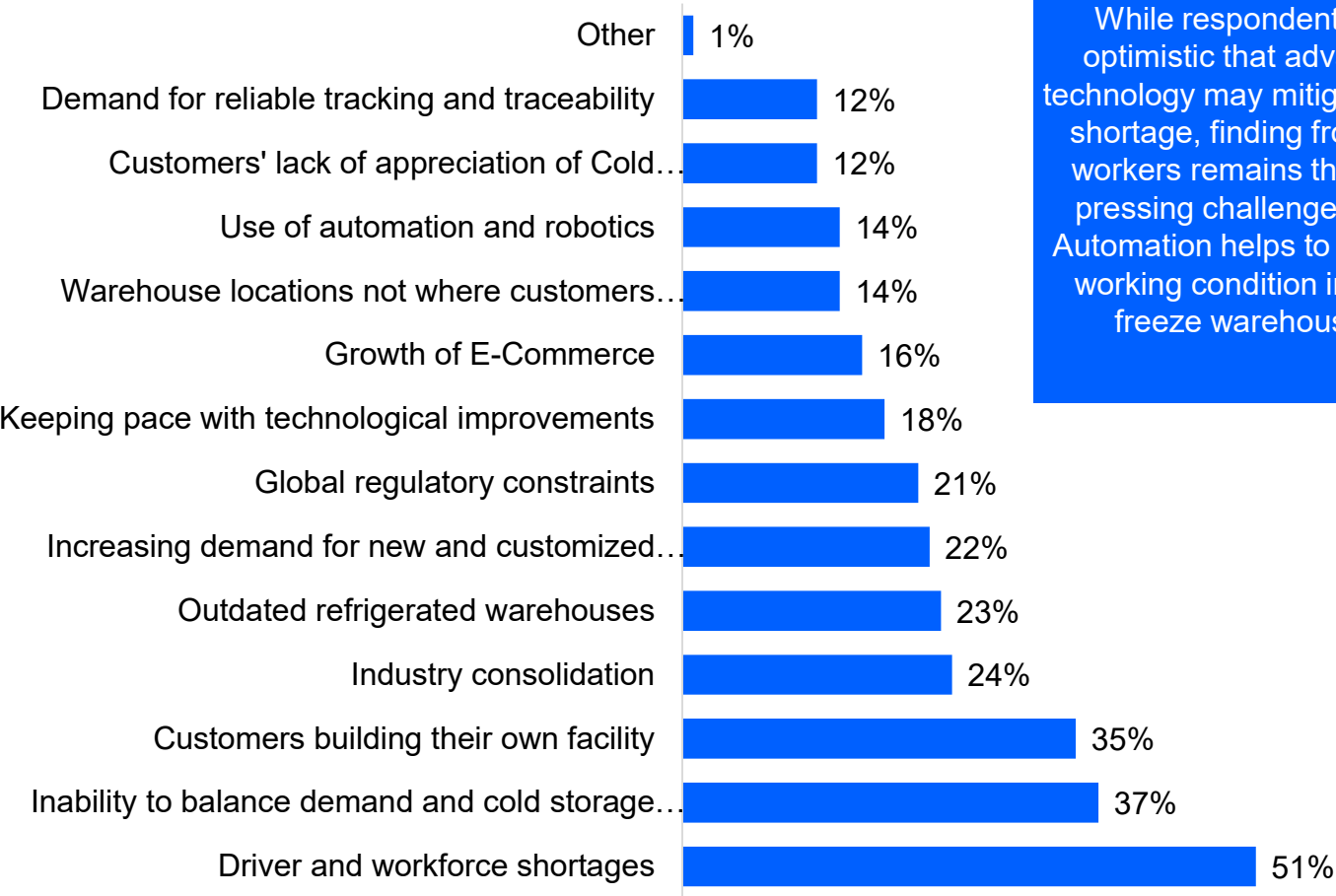
Sources: Körber, Apics Anaheim (Park Logistics), TGW, Righthand Robotics

Automation For Extreme Working Conditions: Deep Freeze



Warehouse Automation To Increase Productivity

Greatest challenges for the cold chain industry



While respondents are optimistic that advanced technology may mitigate labor shortage, finding front-line workers remains the most pressing challenge today. Automation helps to improve working condition in deep freeze warehouses.



Digitization To Improve Productivity

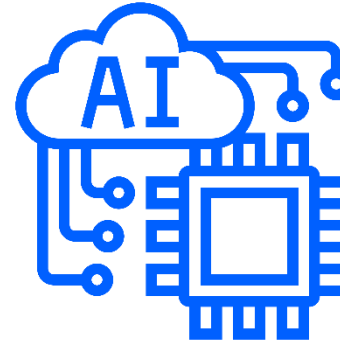
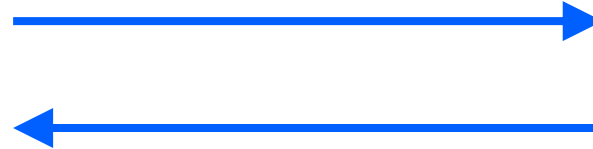
Warehouse Automation To Increase Productivity



Körber Supply Chain
**Master
Class
Series**

Collect data

- Errors
- Sensor input
- Orders picked
- Product images
- ...

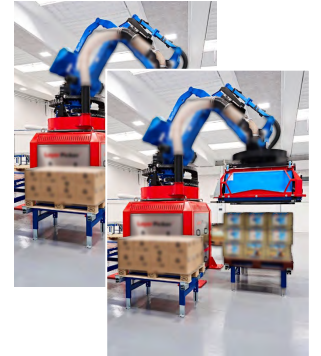
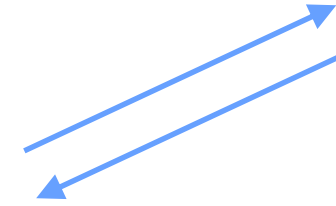


Optimize

- (Pick-)program selection
- Parameter settings
- Material flow optimization / Order scheduling
- Predictive maintenance
- ...



**Supports the worker in
better operating his machine**



How Employees and Companies Can Benefit From Automation



Automation can help to

- **Not reach or exceed the physical limits of a human body**, despite increasing performance expectations through global competition
- Significantly **reduce illness-related absences** due to physical strain
- **Assist workers** in repetitive and unhealthy tasks
- Get people **out of unhealthy working environments**
- **Overcome** challenges driven by the **demographical change**
- Offer **attractive jobs** with modern infrastructure that support workers
- To take more **responsibility towards employees**
- To **cope with** new challenges and distancing rules caused by **Covid19**
- Be recognized as **attractive and innovative employer**
- **Improve productivity** by combining human workforce and automation best
- **Improve quality**: less damage due to wrong handling; better transparency due to track & trace



Thomas Schulz, CHRO at Schenker AG: "Our employees are our most important and valuable asset. I am therefore very pleased that we are taking another important step towards testing better and, above all, healthier working conditions for our employees. This brings us closer to our strategic target of being the employer of choice as an innovative and leading logistics service provider."

Körber Supply Chain

**Master
Class
Series**

Sources: <https://www.dbschenker.com/global/about/press/global-stories/exoskeletons>

Questions & Discussion

SAP Supply Chain Logistics- Best Practices for Implementation

SAP is one of the leading WMS options across the globe, with more than 2,000 companies using the solution worldwide. As more companies embrace and seek out the technology, it's important to learn from the implementations that have come before.

Join us on Tuesday, September 29th as Thomas Gries reviews the best practices to put in place when undergoing an SAP implementation.

Contributor:

Thomas Gries

Chief Executive Officer, SAP Solutions

Körber Supply Chain