



Xavier Pifarré, HISPACK, Abril 2015

# Logistics

# Robots and Automation in Logistics

# Robots and Automation in Logistics Index

ABB GROUP

Logistics in Production lines.  
Packaging Applications

Logistics Data. Trends, Potential

Logistics applications. Videos





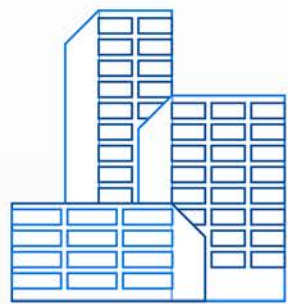
# Robots and Automation in Logistics

## ABB Group, Basic Figures

~140,000   
employees

 **\$40** billion  
In revenue (2014)

Present in  
~100   
countries

Formed in  
**1988**   
merger of Swiss (BBC, 1891) and Swedish (ASEA, 1883) engineering companies



# Robots and Automation in Logistics

## ABB Divisions, Global Footprint

### Orders by division

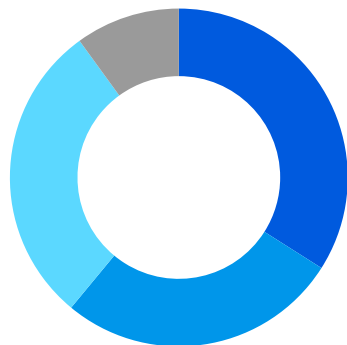
% of total orders 2014



- 24% Discrete Automation and Motion
- 17% Low Voltage Products
- 19% Process Automation
- 16% Power Systems
- 24% Power Products

### Orders by region

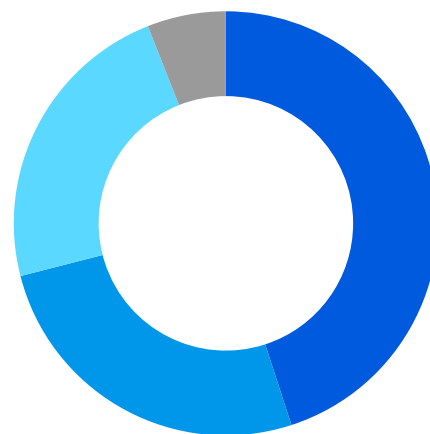
% of total orders 2014



- 34% Europe
- 27% Asia
- 29% Americas
- 10% Middle East and Africa

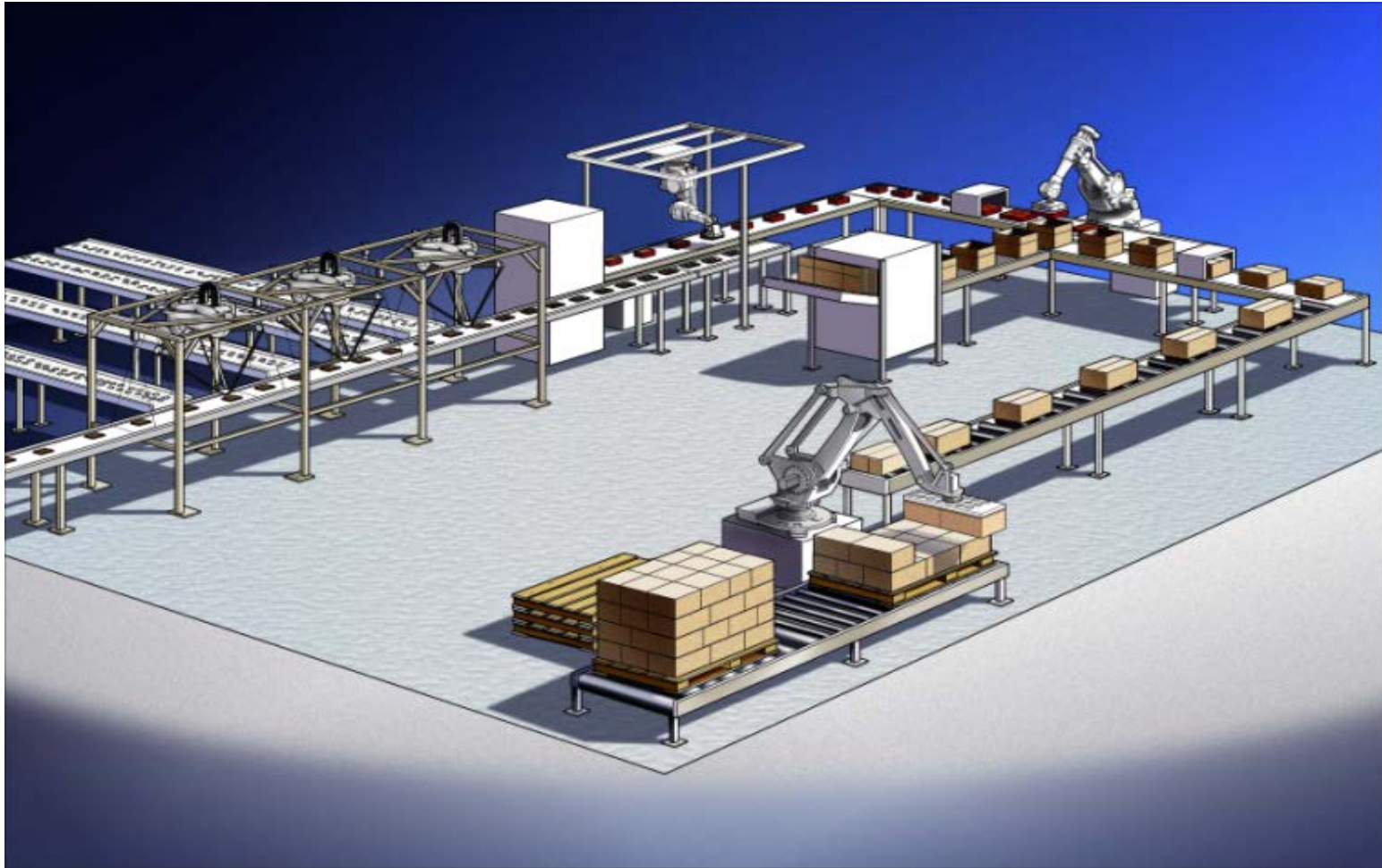
### Employees by region\*

2014



- 45% Europe
- 26% Asia
- 23% Americas
- 6% Middle East and Africa

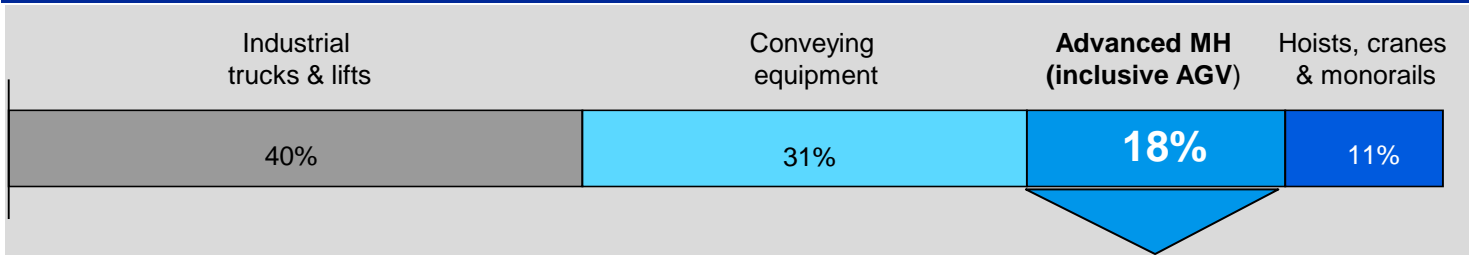
# Robots and Automation in Logistics Production lines. Packaging Applications.



# Robots and Automation in Logistics

## Logistics. Trends and Potential. Investments

**Total material handling investments of 111 USD bn in 2013**



### Types and definition of advanced/automated material handling

- All types of AS/RS (Automated storage retrieval system)



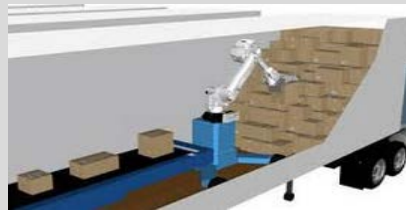
- AGV



- Robots



- Software solutions



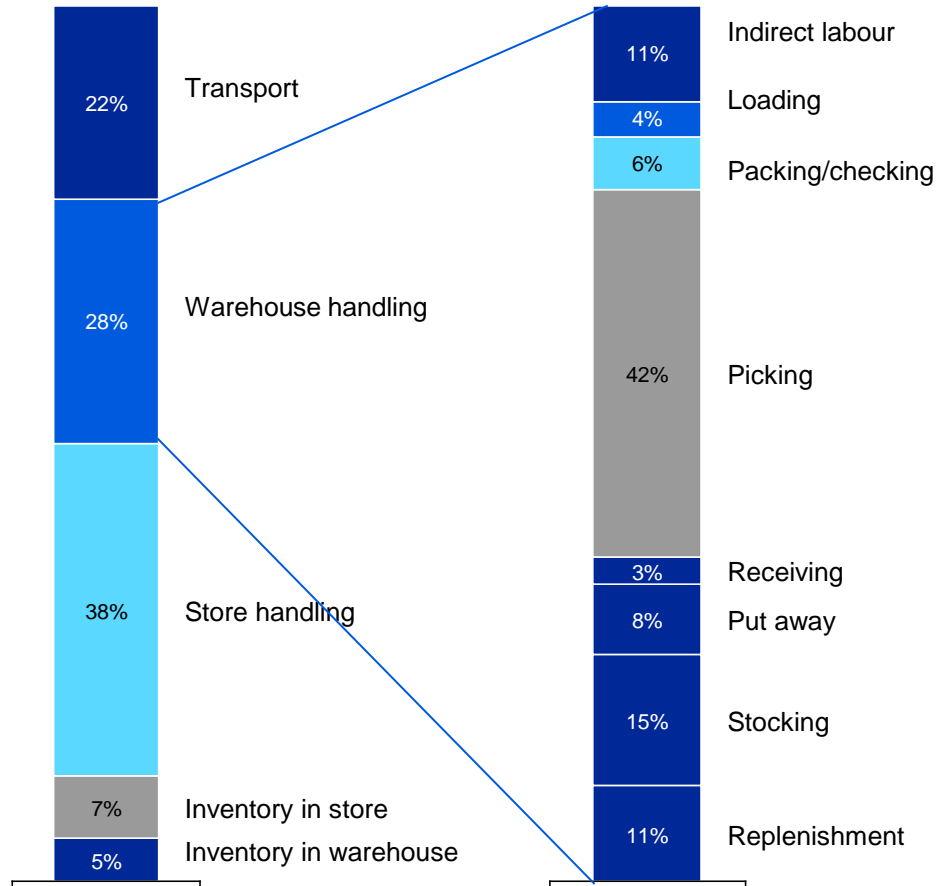
# Robots and Automation in Logistics

## Logistics. Trends and Potential. Cost Split

### Cost split in retail supply chain industry

Operational cost of retail supply chain industry

Warehouse labor cost analysis



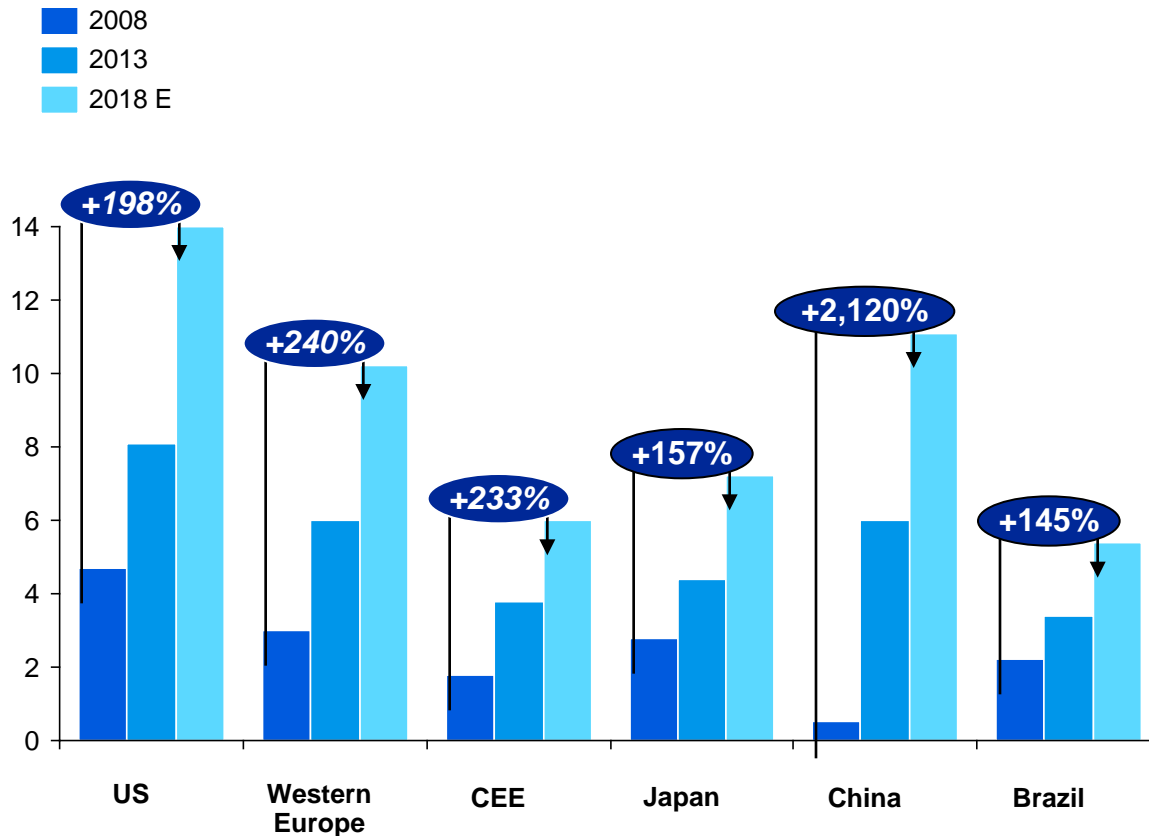
Source: COOP Logistics 2014 & KOM International

- The main part of retail supply chain costs are developed in store handling which is the area where consumer packages are handled manual and most challenges to automate
- Handling in warehouse is accountable for 28% and automation level increases in this sector
- Picking is the main time consuming labor activity in a warehouse and is the area who gets most attention for future automation
- The manual receiving area is only 3% of labor cost and most likely a business case to automate is difficult unless ergonomic and safety aspects counts

# Robots and Automation in Logistics

## Logistics. Trends and Potential. E-Commerce

% of e-commerce share of traditional store-based retail



**The biggest change in the retail industry is the raise of e-commerce which puts the unsolved picking in focus**




- China is coming from nowhere in 2008 and the forecast to 2018 is a incredibly high
- US has been in leader in e-commerce with companies such as Amazon and E-bay.
- E-commerce requires double the amount of warehouse capacity compared to traditional retail due to various number of SKU (stock keeping unit)
- All players in the industry try to solve how to make e-commerce process more efficient

Source: Goldman Sachs



# Robots and Automation in Logistics Applications I







## Distribution center applications mapping from a robot perspective

	Unloading goods	Dewrapping pallets	Put away
<b>Description</b>	 <p>1</p> <p>Goods on pallets or roller cages to be unloaded</p>	 <p>2</p> <p>All pallets received need to get wrapping removed</p>	 <p>3</p> <p>Goods placed on a conveyor and are automatic placed in a AS/RS<sup>1</sup>-solution (X,Y &amp; Z)</p>
<b>Level of automation</b>			
<b>Type of automation</b>	<p>20-60 minutes for one person to unload with forklift or telescopic conveyor with manual unloading</p>	<p>Mainly manual</p>	<p>Fully automated closed AS/RS in combination with conveyor system A major investment for a DC</p>

■ No automation   
 ■ Automation exist   
 ■ High automated

# Robots and Automation in Logistics Applications II







## Distribution center applications mapping from a robot perspective

Description	Depallitizing	MH to case buffer	Kitting and display
Level of automation	 	 	 
Type of automation today	<p>Fixed automation, manual or robot (Gantry and articulated robots)</p>	<p>Half pallets/cases can be taken automatically or with manual forklift</p>	<p>Manual</p>

■ No automation   
 ■ Automation exist   
 ■ High automated

# Robots and Automation in Logistics Applications III

## Distribution center applications mapping from a robot perspective

	Picking	Case picking & palletizing	Roller cage/pallet loading
<b>7a</b>			
<b>Description</b>	Goods are picked according to released sales order	Goods on a conveyor to be picked and standard/mixed palletized	Pallets or roller cages placed on a temporary platform and loaded on truck
<b>Level of automation</b>			
<b>Type of automation</b>	- Pick by voice, goods to people (automatic shuttle system) manual picking	Fixed automation, manual and robot technology (standard and mixed palletizing)	Manual loading with forklift

■ No automation   
 ■ Automation exist   
 ■ High automated

# Robots and Automation in Logistics

## Videos (1) Manufacturing, Sweden



# Robots and Automation in Logistics

## Videos (2) Distribution Center, Australia



# Robots and Automation in Logistics

## Videos (3), Multireference packing, Canada



# Robots and Automation in Logistics

## Videos (4) Multireference palletizing, Canada



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