

BALYO

AUTONOMOUS VEHICLES
FOR LOAD & PALLET MOVEMENT

Corporate Presentation

October 2020



Linde robotics
COMPANY INTRODUCTION

Convert material handling to Autonomy

A MAJOR CHALLENGE FOR INTRALOGISTICS



- **More than 5 million**
Material handling vehicles deployed around the world
- **€33 billion**
Annual global expenditures on material handling
- **More than 80%**
Of handling vehicles operating costs related to driver costs
- **€200 billion**
Annual global expenditures on pallet handling
- **\$380 million**
Estimated annual expenditures on material handling of a major client

Less than 1% of pallets moved today by robots !

Company estimates

BALYO

OUR VISION

FOCUS HUMANS ON CREATIVE JOBS

OUR MISSION

DESIGN, SALE AND OPERATE SIMPLE AND AFFORDABLE
ROBOTS, SYSTEMS & SERVICES GLOBALLY

BALYO



Founded in 2006



Software & Systems company



Locations in Boston, Paris, Singapore & China



Industrial & commercial partnerships with Linde (KION) & Hyster-Yale Group since 2014 respectively 2015

Commercial partnership with 20+ systems integrators starting 2020

BALYO: a disruptive solution vs historical players

AUTOMATED GUIDED VEHICLES (AGV)

- 📉 Custom-built vehicles
- 📉 Navigation requiring additional infrastructure
- 📉 High costs and long-time integration
- 📉 Non-evolutionary solution
- 📉 High maintenance

Low volumes
Low gross margin

ROBOTS

- 📉 Standard vehicles
- 📉 Geo-navigation
- 📉 Quick integration with limited resources
- 📉 Flexibility
- 📉 Simple, global maintenance

Scalable solution
High gross margin



2 strategic alliances

STANDARD FORKLIFTS FOR SERVICEABILITY - WORLDWIDE



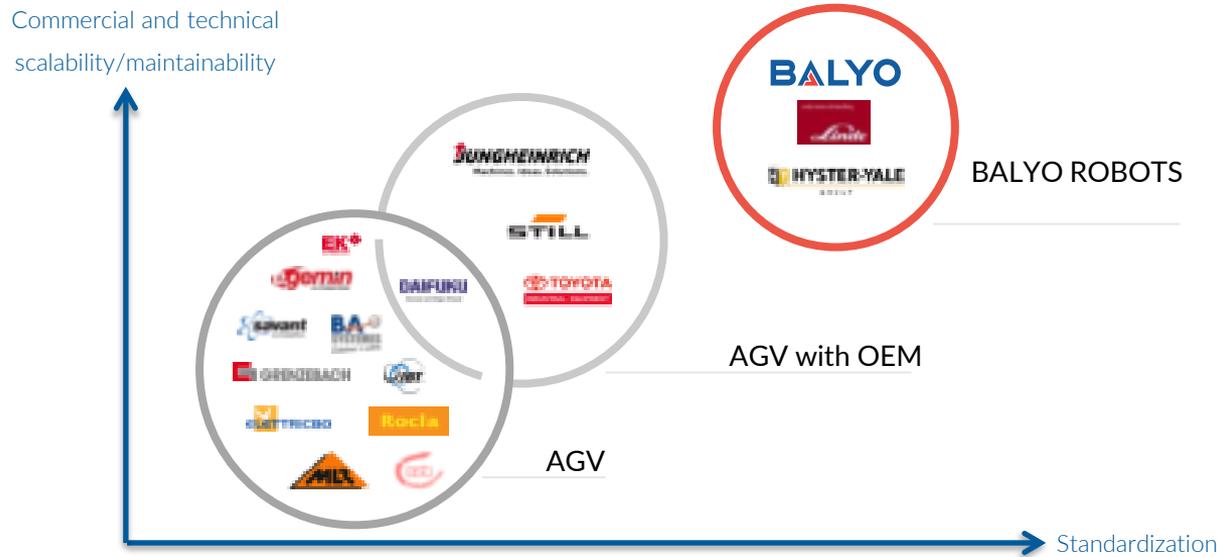
No.2 worldwide
No.1 in Europe
No.3 in Asia
More than 33,000 employees
€8.0 billion revenue in 2018



No.5 worldwide
No.2 in the United States
More than 6,500 employees
€3.2 billion revenue in 2018

Market structure: Key forklift robots players

SCALABILITY, MAINTAINABILITY & STANDARDIZATION



BALYO at the forefront of innovation

AMBITIOUS R&D STRATEGY

21 M€

allocated in R&D since 2015

25% of 2019 revenues

allocated in R&D, through
high value added projects

50 patents

granted since 2016
including 15 in 2019

Localization

Safety

Perception

Installation tools

Navigation

Energy
Management

Fleet
Management

Communication
Management

Remote
monitoring &
control

BENEFITS



Partners' network

Global Sales &
Local Services



Mass produced standard trucks & long term spare parts availability. Easy to maintain.

Standard &
affordable robots



No infrastructure required

Easy & fast install



Dual mode, Manual & Automatic

Simple to use &
Flexible

Business development

100+ CLIENTS, 250+ SITES use 600+ ROBOTS in 30 COUNTRIES over 4 CONTINENTS



Our sales targets : Tier 1, in 3 key sectors and 3 geographic areas, some client examples

AUTOMOTIVE



LOGISTICS



CONSUMER GOODS



An experienced management team



**Pascal
RIALLAND**
CEO



**Alec
LAFOURCADE**
COO



**Philipp
SCHMIDT-
HOLZMANN**
CSO

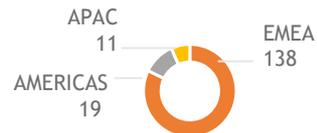


**Frank
CHUFFART**
CFO



168
employees in 5 countries⁽¹⁾

Workforce breakdown by Region ⁽¹⁾
(% of total workforce)



⁽¹⁾ as of June 30, 2020

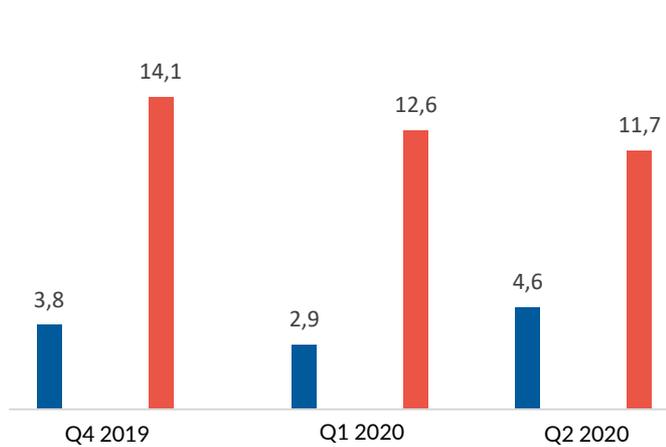


Linde robotics
BALYO – 2020 HYR

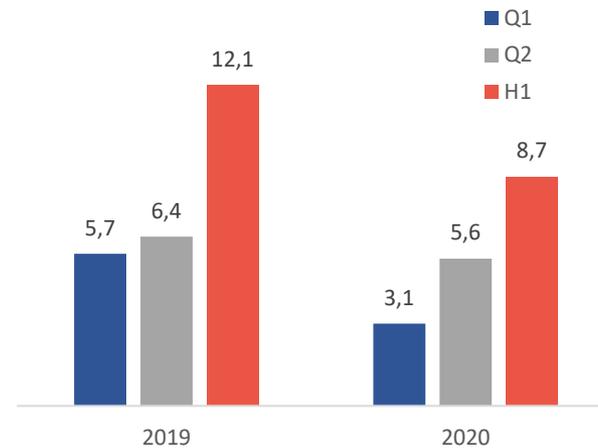
BALYO

Sales for H1 2020: a transitional year

+ Backlog & Order intakes (€m)



+ Revenue* (€m)



* excluding the restatement related to the inclusion of the IFRS2 charge relative to the allocation of BSAs

2020 Half-year results

IFRS (€M)	S1 2019	S1 2020
Sales revenue	12,14	8,67
IFRS 2 charge related to the Amazon BSAs	(0,69)	(0,01)
Sales revenue reported	11,45	8,67
COGS	-9,71	-8,33
Gross margin	1,74	0,33
Margin (%)	15%	4%
R&D	-2,70	-2,39
Sales & Marketing	-3,27	-1,26
G&A	-3,55	-3,09
Share-based payment	-0,16	-0,06
Operating profit	-7,94	-6,46
Financial result	-0,13	-0,24
Net result	-8,08	-6,69

1

Gross margin level (4% before the IFRS 2 restatement) is due to the recognition of warranty costs of €1.1m

2

Decrease in operating expenses are mainly due to a decrease in payroll in line with the reduction of employees and a reduction in travel expenses given the health context

Cash Flow Statements as of June 30, 2020

IFRS (€k)	Dec. 31, 2019	June 30, 2020
Cash used for operating activities	-7,927	-2,303
Cash used for investing activities	-0,727	-0,0289
Cash provided for financing activities	-1,727	6,473
Change in cash	-10,371	4,136
Cash & cash equivalents	4,557	8,692

1

Financing activities are linked to state-guaranteed loan (PGE) for which €6.5 million have been received over the period on a total amount of €9.5 million

Balance sheet as of June 30, 2020

IFRS (€k)	Dec. 31, 2019	Jun. 30, 2020
Non-current assets	8,204	7,675
Inventories	3,642	2,893
Trade accounts receivables	12,691	11,731
Other receivables	3,898	3,257
Cash & cash equivalents	4,557	8,718
Total assets	32,991	34,275
Shareholders' equity	5,286	(926)
Non-current financial debt	4,607	4,309
Current Financial debt	1,257	8,158
Trade notes and accounts payables	9,950	8,771
Tax and employee-related payables	3,147	3,750
Other current liabilities	8,353	9,260
Total liabilities	32,991	34,275

1

Net debt as of June 30, 2020:
€3,7 million

2

Non-current Financial debt mainly includes:

- Debt related to rental obligations (IFRS16)
- Repayable advances

Current Financial debt mainly includes:

- State-guaranteed loan (€6,390k)
- Debt related to rental obligations (IFRS16)
- Repayable advances

3

Other current liabilities mainly include:

- Customer advances and deposits received
- Deferred revenues



BALYO – COMMERCIAL STRATEGY

3 business lines for 2020 and beyond

Business line 1

Strengthening
the two OEM partnerships
LMH & HY



Improved industrial and
commercial efficiency

Empower commissioning by
OEM

Business line 2

Sales of robotic solutions
to intralogistics integrators



Wider market reach
Adapt to the APAC market

Complementarity with OEM

Reduce commercial risk

Business line 3

Piloting pallet-movement
"as a service" offering



Disruptive market approach
to scale up from 2021

No CAR for Clients

All-inclusive model

Piloting of pallet movement "as a service"

Unique response to the three main constraints to robotization of material handling



- ELIMINATE the need for capital expenditure for customers with pay-per-use billing
- INCREASE the performance of robotic solutions: integrating a tele-operator monitoring the system 24/7 and capable of taking control of the robot remotely when needed
- SIMPLIFY technology adoption: packaged and operated solution for customers missing specific technical resources

From Manual to Autonomy to Service

Manual Forklifts



Autonomous Forklifts



Pallet-movement as a Service



- Significant payroll expenditure
- Forklift trucks fleet operated by clients
- Very high OPEX
- Variable productivity

- Lowered payroll expenditure
- Forklift Robots fleet operated by clients
- ROI < 2 years
- Replace OPEX with CAPEX

- No/limited upfront expenditure
- Fork-lift robots fleet operated remotely by MoWo
- All included, simple
- Pay-per-use, immediate ROI
- No CAPEX, reduced OPEX



THE « DRIVEN BY BALYO » TECHNOLOGY

TECHNOLOGY



Manual Truck

- Robust
- Affordable
- Parts & Services available worldwide

Driverless kit

- Infrastructure free
- Integrated design
- Adaptable to changes

Robotic Truck

- Dual driving modes :
Automatic & Manual
- Global & Local service

INFRASTRUCTURE FREE NAVIGATION

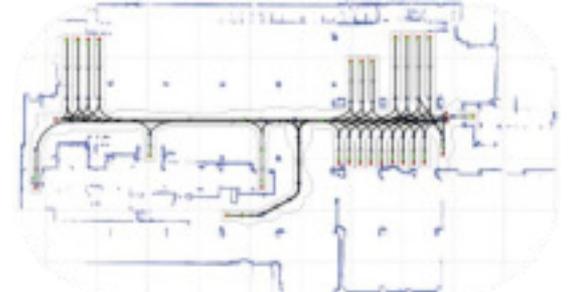
1. 2D MAPPING



2. MAP CLEAN-UP

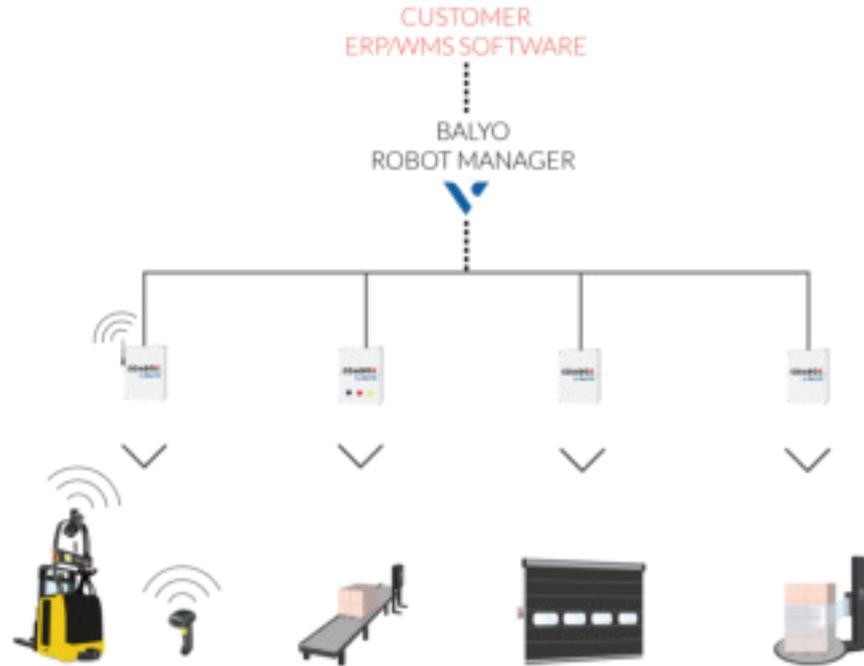


3. ROUTES
& PICK/DROP



INTEGRATION

#SCALABLE



ROBOT MANAGER

DRIVEN BY BALYO

Modules Tâches Configuration Disposition Aide

- Cartographie
- États AGV
- États portes
- Tâches
- Messages informatifs
- Combo
- Raccourci

COMBO

Statut	IP	From	EpCan	ID	Etat des entr	Etat des sort
📶	10.10.244.231			1	●●●●	●●●●
		0			●●●●●	●●●●●

SHORTCUT DOOR STATES COMBOX

INFORMATIVES MESSAGES

Type	Message	Date
AGV info	AGV 3 end of security	13/04/2016 14:18:28
AGV info	AGV 3 in error	13/04/2016 14:16:40
AGV error	AGV3 in error Yaw: Others...	13/04/2016 14:16:40
AGV info	AGV 3 end of security	13/04/2016 14:15:00
AGV info	AGV 3 in security state	13/04/2016 14:14:36
AGV info	AGV 3 end of security	13/04/2016 14:14:54
AGV info	AGV 3 in error	13/04/2016 13:55:39
AGV error	AGV3 in error Yaw: Others...	13/04/2016 13:55:38
AGV info	AGV 3 running a task	13/04/2016 13:55:00
AGV info	AGV 3 available	13/04/2016 13:54:58

AGV STATES

Identif	Conn	Secur	Posite	Navig	Tache	Batterie
P-MATI	OFF					
L12-HP	OFF					
L-MATI	OFF					
L-MATI	OFF					
L-MATI	OFF					
L-MATI	OFF					

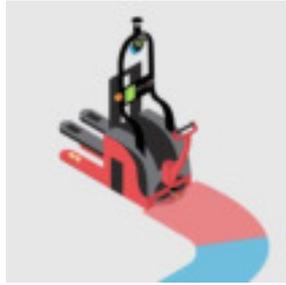
Tâches

ID	Etat	Type	De	À	Priorité	Palettes	AGV	Etape	Creation	Attente	Durée
936	En cours	batterie	N/A	N/A	0		L-MATIC	Init	13/04/2016 14:16:14	02:49:13	
891	En cours	batterie	N/A	N/A	1000		L-MATIC AC PG2	Batterie (1/1)	13/04/2016 12:23:40	00:00:53	04:38:56
912	En cours	batterie	N/A	N/A	1000		L-MATIC AC PG3	Batterie (1/1)	13/04/2016 13:23:46	00:01:05	03:42:38
885	En attente	dropSensor	N/A	Sol1 Pos0	1			Init	13/04/2016 12:19:10		04:46:19
911	En attente	dropSensor	N/A	Sol2 Pos0	1			Init	13/04/2016 13:19:15		03:46:14

SAFETY & SPEED



- Front Safety PLD
- Speed up to 2m/s
VNA up to 2,2m/s
- Slow/Stop zones
- Stop&Go
- SW detection
- HW safety



- Unique front safety adaptation in turns



- Side Safety PLD
- Speed up to 0,45m/s
- Slow/Stop zones
- Stop&Go
- SW detection
- HW safety



- Back Safety PLD
- Speed up to 0,8m/s
VNA up to 2,2m/s
- Slow/Stop zones
- Stop&Go
- SW detection
- HW safety



- Curtain Detection
- Speed up to 2m/s
- Stop&Go
- SW detection



Linde robotics
PRODUCTS & APPLICATIONS

A COMPLETE & GLOBAL ROBOT RANGE



Pallet truck



CB Stacker



Stacker



CB Stacker



Reach Truck



Reach Truck



VNA



Tugger / Tractor



Stacker

LOW LIFT: up to 1,7m / 3,5t – towing 5t

MIDDLE LIFT : up to 4m /
2t

HIGH LIFT : up to 12m / 1,6t

ROBOT CAPACITY: WEIGHT & HEIGHT



3,5t

MPE 080 Driven by Balyo



2,5t

MO25 Driven by Balyo



7t

MO70 Driven by Balyo



2t
4m

L-MATIC HD



1,5t
1,7m

MC Driven by Balyo



3t

T-MATIC

Pallet trucks



5t

P-MATIC

Tuggers



1,2t
1,7m

L-MATIC

Stackers



1,6t
4,2m

L-MATIC AC

CB Stackers



1,6t
11m

R-MATIC

Reach Truck



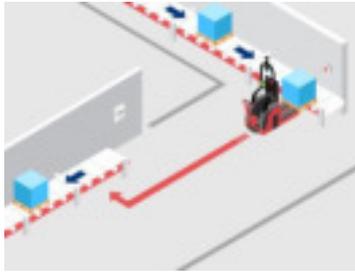
1,5t
12m

K-MATIC

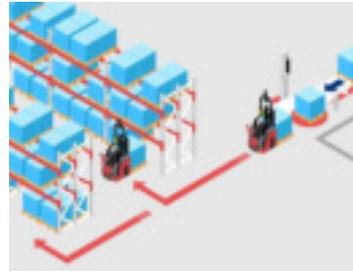
VNA

Robot applications overview

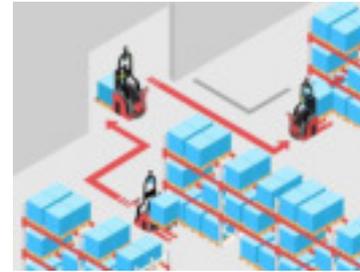
CONVEYORS
INTERFACE



END OF LINE
& STORAGE



STACKING



MACHINES INTERFACE



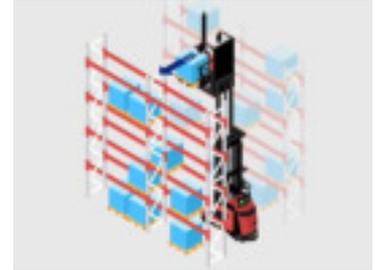
LOGISTICS TRAIN



HIGH STORAGE



VERY HIGH STORAGE



MOST ADVANCED IN-RACK APPLICATION RANGE



Standard
Rack (2.9m)



Very narrow
aisles



Gravity
rack



Canteliver



Shuttle
rack



Mobile
rack



Block
storage



Double deep



Drive in



Push
back

AVAILABLE

SOON

NO GO

NEW IN 2020: AMR « Driven by Balyo »

	SHERPA® - B serie		SHERPA® - P serie		SHERPA® - W serie
Main objective	Moving / transporting bins		Moving / transporting pallets		All-purpose/ Multi-tasking
Payload (up to)	100 kg	200 kg	500 kg	1.000 kg	200 kg
Speed (up to)	7 km/h	4 km/h	7 km/h	4 km/h	7 km/h
Dimensions	950 x 600 x 650		1350 x 950 x 350		1150 x 500 x 650
Availability	Available		Q3 - 2020		Q4 - 2020

