



Technologies for our future



Intralogistics: Mobile Assistance Systems and the Lean Smart Factory

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- Operational Excellence Journey
- Lean Smart Factory
- Mobile Assistance System – OT /IT
- Logistic Controller



Assembly Lines

2007 – Lean Factory

2018 – Lean Smart Factory

The Lean Smart Factory integrates Lean principles and I4.0 technologies:

- Optimization of **Value-Adding activities**, e.g. gear assembly, terminal box mounting...
- Elimination/Reduction of **Non Value-Adding activities**, e.g. rework, waiting time...
- Automation of **Necessary Non Value-Adding activities**, e.g. material movement, oil filling, motor press...



MAS – Mobile Assistance System

Introduction of 45 MAS to transport material and assist assembly activities



Automatic Oilfilling Machine

Automation of a repetitive and quality-relevant activity
2 machines installed



Automatic Motor Presses

Automation of a repetitive and not ergonomic activity
2 machines installed



MES - Information Digitalization

Real-time information shared across interconnected systems



- **Human-Machine Collaboration**
Each MAS is equipped with a tablet to allow the operator to interact with the MES
- **Adaptable Workbench**
The MAS could adapt to the biometric characteristics of each operator (from min 850mm to max 1250mm)
- **Safety First**
The MAS detects the presence of obstacles and adapts the safety fields thanks to the laser scanners
- **Flexible Navigation**
Thanks to the SLAM navigation system, the MAS does not need optical guides on the ground.



- **Univocal Product ID**
A unique product reference (Shop Floor Control) is associated to the MAS to guarantee traceability and one-piece flow
- **Tailored Visualization**
The assembly information are shown to the operator only when and where they are needed – BOM, Assembly Instructions, Quality Specification
- **Real-Time Traceability**
Thanks to real-time communication, it is possible to know the current position of each SFC and related information



- **Fleet Management**

The Logistic Controller manages the queues in the assembly cells based on real-time workload

- **Customizable Routing and Characteristics**

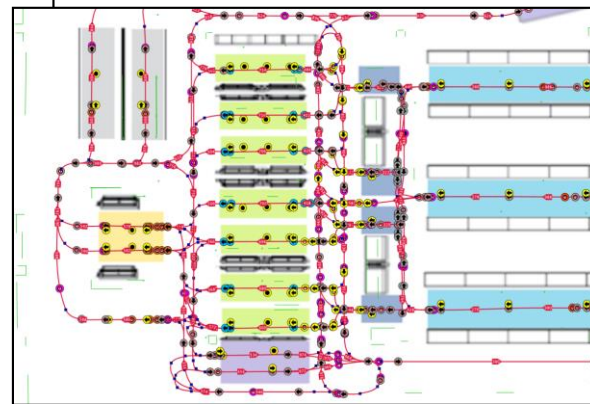
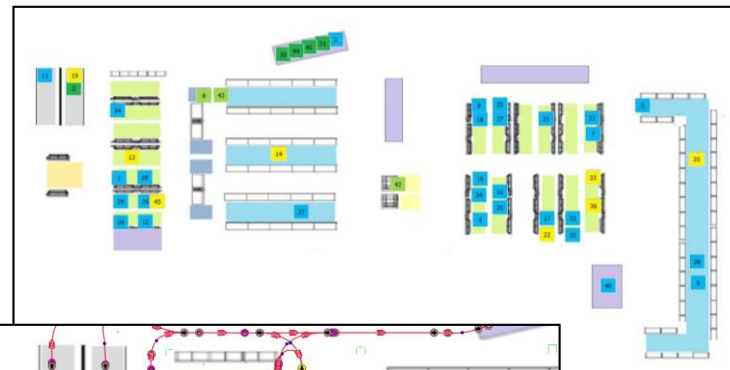
Through a dedicated software, it is possible to adapt the settings of the MAS to specific needs – Stopping points, Lift...

- **Continuous Monitoring**

The Logistic Controller monitors the status of the MAS active in the fleet – Localization, Laser scanners, Brakes...

- **Hand Shake Approach**

The assembly information are shared among different systems (MAS, Oil Filling, Motor Press)





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Thanks for your attention!