



# HOW TO MANAGE THE SUPPLY CHAIN IN A PACKAGING LINE

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# targets

## INTRODUCING

FEATURES AND BENEFITS  
OF SUPPLY CHAIN AUTOMATION

## ILLUSTRATING

THE TREND TOWARDS  
HYPER-AUTOMATION

## SHOWING

HOW E-COMMERCE  
CHANGES THE SUPPLY CHAIN

## DESCRIBING

HOW CLEVERTECH'S HOLISTIC  
APPROACH HELPS AUTOMATING  
THE PACKAGING SUPPLY CHAIN  
EFFECTIVELY, ALSO FOR E-COMMERCE



# introduction

The supply chain is a critical business process which path towards automation started over a century ago with Henry Ford.

Today, we witness a further evolution, mainly thanks to number of technologies, an supporting process led automation, focused on activities carried out though pre-determined paths and processes; automation is data and environment controlled to manage more complex process and manage silos along the procurement chain. No matter the approach chosen; in fact, starting from processes or data, Gartner mentions that already by the end of 2022, 65% of the businesses that implemented robotized process automation (RPA) introduced even artificial intelligence, including machine learning and **natural language processes (NPL)**. Implementing these technologies will help reduce operating costs by 30% within 2024.

# Supply chain and Automation: Features and Benefits

Automating the supply chain requires the use of new technologies in logistic processes to improve efficiency from production to distribution.

In fact, the new supply chain is digital and connected; thanks to such technologies as artificial intelligence, cloud, digital twin and the Internet of Things (IoT) the process is quicker and fully transparent in every single stage.

Automated solutions ensure a constant supply of goods to the lines or to the storage area, including with autonomous mobile robots.

Further, automation reduces possible inaccuracies in the stock handling and inventory management.

Finally yet importantly, digital solutions increase the ability to react in case of supply chain interruptions or sudden peaks of the demand.

## **TOWARDS HYPER-AUTOMATION: BIG DATA, DIGITAL TWIN, BLOCK CHAIN, IOT AND 5G**

Still referring to the Gartner <sup>[1]</sup>, report, within the next decade, global supply chains will benefit from the so-called hyper-automation, that is a combination of several technologies, among which 5G, robotic process (RPA: Robotic Process Automation), edge computing and machine learning.

The report ranks the supply chain development in three stages: automation (until 2025, characterised by RPA, AR), a greater number of functionalities (until 2030,

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**[1]** Supply Chain Will Become Autonomous Faster Than You Expect”, 2022

characterised by machine learning and digital twin) and autonomy (after 2030, through and advanced application of artificial intelligence and augmented human capabilities thanks to a technology called Augmented Humans Capabilities).

Process automation means above all a centralised control, while ensuring a full visibility to all subjects along the supply chain.

Just here, the application of digital twins appears extremely useful; they are digital copies of physical supply chains that allow testing changes and optimisations.

Distributed Ledger technologies will also be essential to track the different process stages along the chain in a uniform and unalterable way, while once again contributing to transparency.

Of course, IoT goes hand in hand with the development of edge computing, that enables the analysis of data, totally or partially, next to the collection point, while the cloud will only carry out more complicated or massive analysis. This way, latency will be consistently reduced while processes can be supported in real time.

Finally, no doubt 5G is the turning point for number of new applications,

such as, e.g. those connected to an immersive experience

made possibly by virtual reality that will let operators

relate one another and with machines in

a completely new way.

# How **e-commerce** Changes the Supply Chain

The traditional system of supply chain management is not efficient to manage e-commerce.

In fact, full transparency of all operations is necessary to enable an omni-channel sale that demands the integrated management of different systems and channels and the possibility to exploit all resources available to fulfil orders.

Further, any return of orders has to be managed in a very easy and simple way; and, again, inventory management shall be automated so as to maintain an appropriate level.

Finally, automation is necessary also to handle items in a warehouse: that is only what you need and when you need it.

In fact, e-commerce has its own requirements. Just to give an example, products are not handled on pallets but in big baskets, each weighing 25 kilograms and with a unique barcode. Products reach the distribution centre on pallets; then they are transferred into big baskets that are conveyed to the next fulfilment centre, from where single orders are shipped. As a whole e-commerce does not like packaging, because removing it requires handwork besides being waste to be removed.

Today, with 40% products going to e-commerce, 40% of the packaging has to be reduced to a minimum. Hence, palletising items for e-commerce means handling products with no stable enclosure in the secondary packaging.

Further, the size of secondary packaging is getting smaller and smaller, while e-commerce usually delivers single items instead of convenience packed goods.

# Cleverttech

## Experience and innovation for the supply chain in the packaging industry



Cleverttech designs, makes and sells integrated solution for front & end of line automation; besides their headquarters in Italy, the company has branches in North America, China, France, Asia and the UK.

Palletizers and de-palletizers are made to improve the supply chain productivity with high-tech and modular solutions that increase efficiency while cutting costs

and ensuring top flexibility and customisation.

The approach to the design of these solutions is holistic: the target is thinking of a machine as seamless module of a complete line avoiding double functions and maximising integration between its different components.

## **FROM THE FACTORY TO THE SHELF: 360° SOLUTIONS**

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Generally speaking, costs related to the supply chain result from the production cost of goods, the storage cost and the cost of automation to ensure an efficient distribution of the final product.

If on one side the cost of a storage area and of the shelves is easily identifiable and to a certain degree fix and predictable, costs connected with the production and management of goods to be sold are extremely variable.

Cleverttech is one of few market players able to manage such variable cost components; in fact, thanks to its own solutions, the company can track a product from the very start of the production cycle to the shipment on pallet.

## **PALLET TRANSFER AND AGV: THE TOP SOLUTION FOR EVERY CONTEXT**

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Just to give an example, at the beginning of the line, thanks to tracking, waste due to product or format changes – that can happen 7-8 times a day, are minimum.

On the contrary, at the end of the line Cleverttech applies two different modes:

- pallet transfer fed by 0,75 Kw drive that take the product from the production line to the adjacent warehouse while automatically deciding which product goes to the distribution section and which to another warehouse.
- lift trucks driven by operators or automated guided vehicles (AGV)

Pallet transfer is by its own nature much cheaper than other solutions, even on the long run; in fact, Cleverttech implemented systems where a finished product is not even touched by an operator until it reaches a super market, which means

managing up to twelve lines at a time connected with automatic trailer loading of a truck.

However, such a solution is good only for companies where the warehouse is next to the production site.

Where the warehouse is far from the production site and one needs to make use of AGVs, Cleverttech cooperates with a leading company applying this specific technology.

In particular, while Cleverttech continues to operate within its own core business on start and end of the line, the partner implements AGVs that, through appropriate communication protocols, are connected integrally to Cleverttech machines.

### **AUTOMATED HANDLING AND MANAGEMENT OF MIXED PALLETS**

Once the product has reached the warehouse, dealers often ask for mixed pallets with layers including different items.

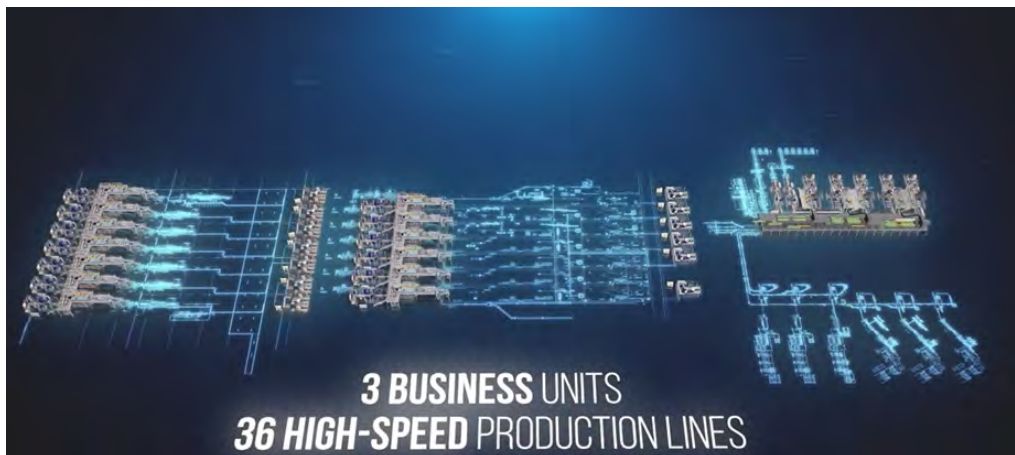
Today, the handling is mostly carried out by hand; however, Cleverttech has developed an application to be dispatched in Japan that allows managing automatically up to 35 different items on a single pallet.

The programme identifies how to organize the palletizing process while placing heavier products on the bottom.

### **USER-FRIENDLY PALLETIZERS FOR E-COMMERCE**

The growth of e-commerce in the last few years with a real booming business during the pandemic revolutionized the intra-logistics and the handling of products. A benefit offered by Cleverttech is its deep knowledge of e-commerce, where it has been operating since 2018; in fact, the company is aware of specific requirements of product handling to be met when working with palletized products.

Just to meet the specific requirements of e-commerce, from the very start Cleverttech organized a dedicated business unit with independent R&D, procurement, supply



chain, assembly and service team.

For example, the use of containers is a widely applied method in e-commerce. In fact, re-usable containers show a lower carbon footprint and do not generate waste of packaging materials for each product consumed.

Clevertech offers two major solutions for containers:

- Management of hard plastic boxes filled with products or empty (up to 1,100 boxes per hour)
- Management of single products in flexible containers, like bags, for final delivery, in Europe and most recently even in North America.

# Conclusion

Automating the supply chain means making use of new technology to process data in order to identify opportunity that make the process more efficient. It also means to be able to respond more flexibly to peaks or dumps of the demand, to be able to foresee mistakes and inefficiency of goods flows; finally ensuring full visibility of the entire life cycle of a product, from design to production to final distribution. Not by chance, McKinsey <sup>[2]</sup> estimates automation of the supply chain may increase income by 20% while lowering total costs of the supply chain by as much as 10%. Again, McKinsey suggests adopting the holistic approach mentioned above to go beyond standard functionality of software for single processes, thus obtaining a direct connection between demand forecast and production and distribution planning.

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[2] Autonomous supply chain planning for consumer goods companies”, report 2022

# Final Keypoints

- Automation is crucial to the supply chain in order to make it more efficient and resilient on a growingly competitive market
- Combining modern technologies, from 5G to IoT to digital twin ,makes it possible to create extremely functional supply chains
- In a supply chain packaging is fundamental as it ensures the protection of products all along the chain
- Cleverttech, a leader of packaging automation in the supply chain, can follow a product from the first step of production to pallet shipping
- With its deep knowledge of e-commerce peculiarities, Cleverttech is also the ideal partner to build dedicated supply chains for this specific channel

