
easy
wms

- **WMS:** Warehouse Management System
- **LEVEL 2:** Radiofrequency Management
- **Practical case:** Centres Autoequip, S.A.

INDEX WAREHOUSE MANAGEMENT SYSTEM

UK offices:
020 8575 1007

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- What is a warehouse?
- Why is a warehouse necessary?
- Operations performed in a warehouse
- Enterprise resource planning: ERP
- Objectives of a warehouse
- Warehouse management tools: WMS
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WHAT IS A WAREHOUSE?

- A space devoted to the efficient and effective storage, management and handling of goods and materials.
- A warehouse is a living part of a company whose management decisively affects the development of the business activity involved.
- It should provide the level of service required at the lowest possible cost.
- It regulates manufacturing / supply and demand (which in most cases is irregular).
- It forms part of today's business strategy.

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WHY IS A WAREHOUSE NECESSARY?

- To regulate the processes of supply and demand.
- To create a safety stock.
- To build up a buffer stock to deal with atypical surges in demand.
- In some cases, warehouses are required due to a need for variability in the market.
- For an efficient use of continuous or non-continuous production units.
- In order to optimise the peaks and troughs in the picking preparation processes.

Nevertheless,
THE BEST WAREHOUSE IS THAT WHICH DOES NOT EXIST

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OPERATIONS PERFORMED IN A WAREHOUSE

Reception

Storage / Inventory

Order preparation

Dispatch

OPERATIONS PERFORMED IN A WAREHOUSE

Reception jobs

- Registration of vehicle entry.
- Instruction to unload vehicle.
- Opening and closing gates.
- Checking documents.
- Unloading goods.
- Revising products and checking quality.
- Labelling materials, products and pallets.
- Palletising and consolidating.
- Signing delivery documents.
- Entering material received in the information system.

OPERATIONS PERFORMED IN A WAREHOUSE

Storage

- Obtaining instructions on location.
- Moving to location and finding positions.
- Transporting and organising pallets.
- Storing material or products in their locations.
- Consolidating incomplete pallets.
- Obtaining restocking instructions.
- Replenishing picking area.
- Reporting and eliminating damaged products.
- Registering the locations used.

OPERATIONS PERFORMED IN A WAREHOUSE

Preparation of orders

- Collecting picking documents.
- Adapting equipment for transport.
- Locating the first picking position.
- Checking and collecting the correct quantity of the product.
- Moving to the next picking positions.
- Correcting anomalies in goods.
- Revising variations in stock.
- Notifying discrepancies and/or damage to products.
- Moving to areas of classification, consolidation, packaging and dispatch.
- Notifying replenishment needs.
- Completing and transmitting documents.

OPERATIONS PERFORMED IN A WAREHOUSE

Dispatch

- Revising notes and products.
- Registering batch and series numbers
- Preparing documents.
- Labelling dispatches.
- Consolidating loads.
- Confirming loads and documents.
- Loading the vehicle by order.
- Permitting the movement of the vehicle.
- Opening and closing gates.
- Documenting dispatch.

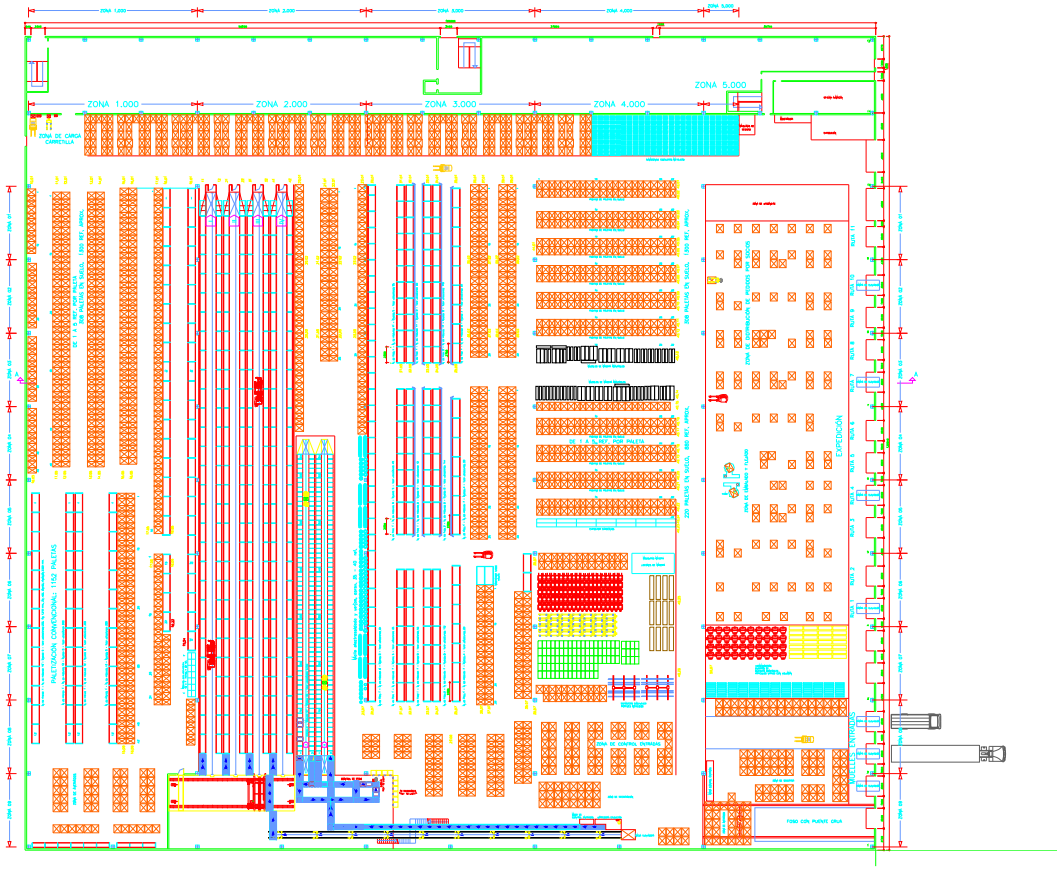
The importance of the warehouse

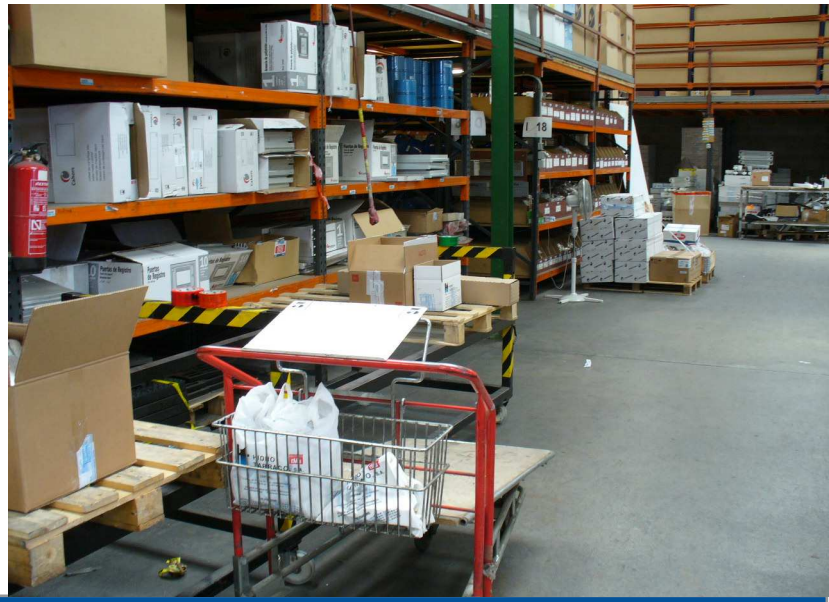
The success of the installation, along with its performance, capacity and durability, depends on the knowledge of the different alternatives which exist in the market and the suitability of its design and management.

In the past. . .

The processes of storage and distribution were considered in most cases as a *necessary evil*, and so only attracted low levels of investment and, what is worst, they were paid scant attention by company management.

The warehouse without control





Today…

Distribution systems are considered as a strategic element within supply chain management. They also represent a key factor in distinguishing companies both in terms of level of service and costs.

THE SURVIVAL OF YOUR COMPANY DEPENDS ON IT

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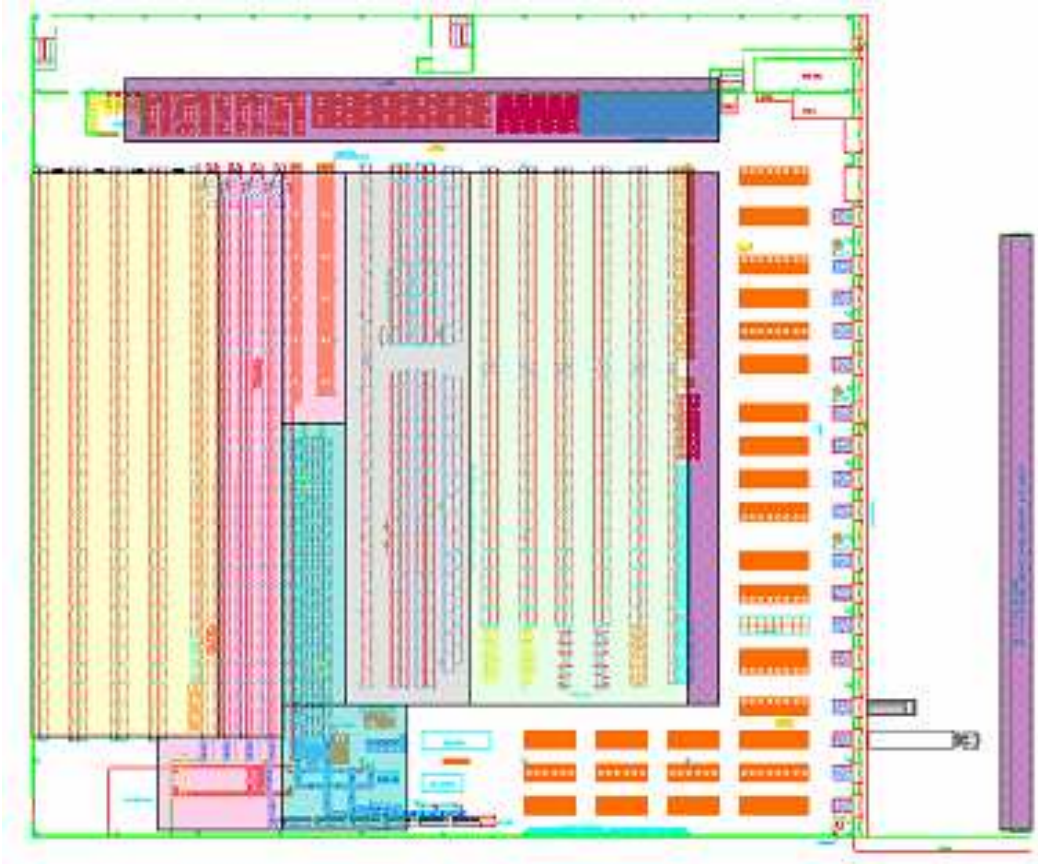
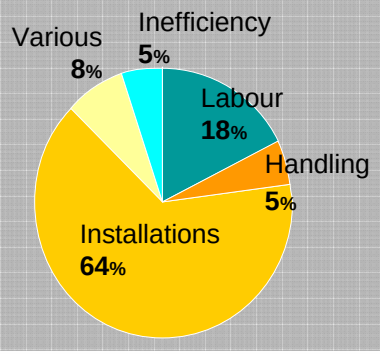
The controlled warehouse



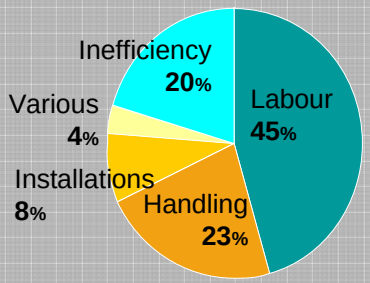
COSTS OF A WAREHOUSE WITHOUT MANAGEMENT

When automating a warehouse it is necessary to identify the principal costs generators and inefficiencies.

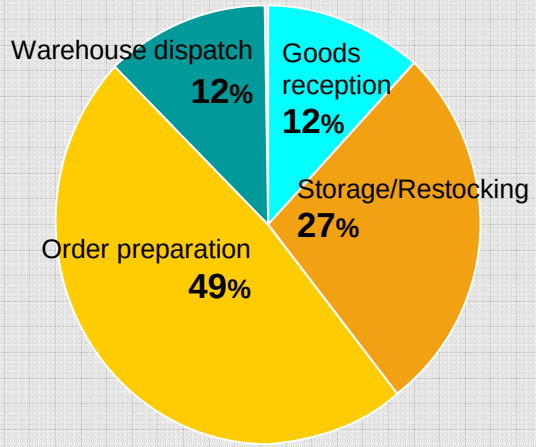
Warehouse dispatch



Order preparation

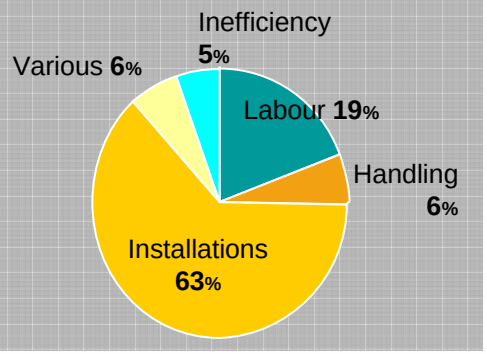


COST PER WAREHOUSE AREA

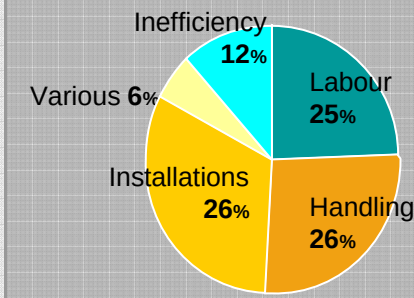


TOTAL YEAR VALUE
€ 1,266,673

Goods reception



Storage/Restocking



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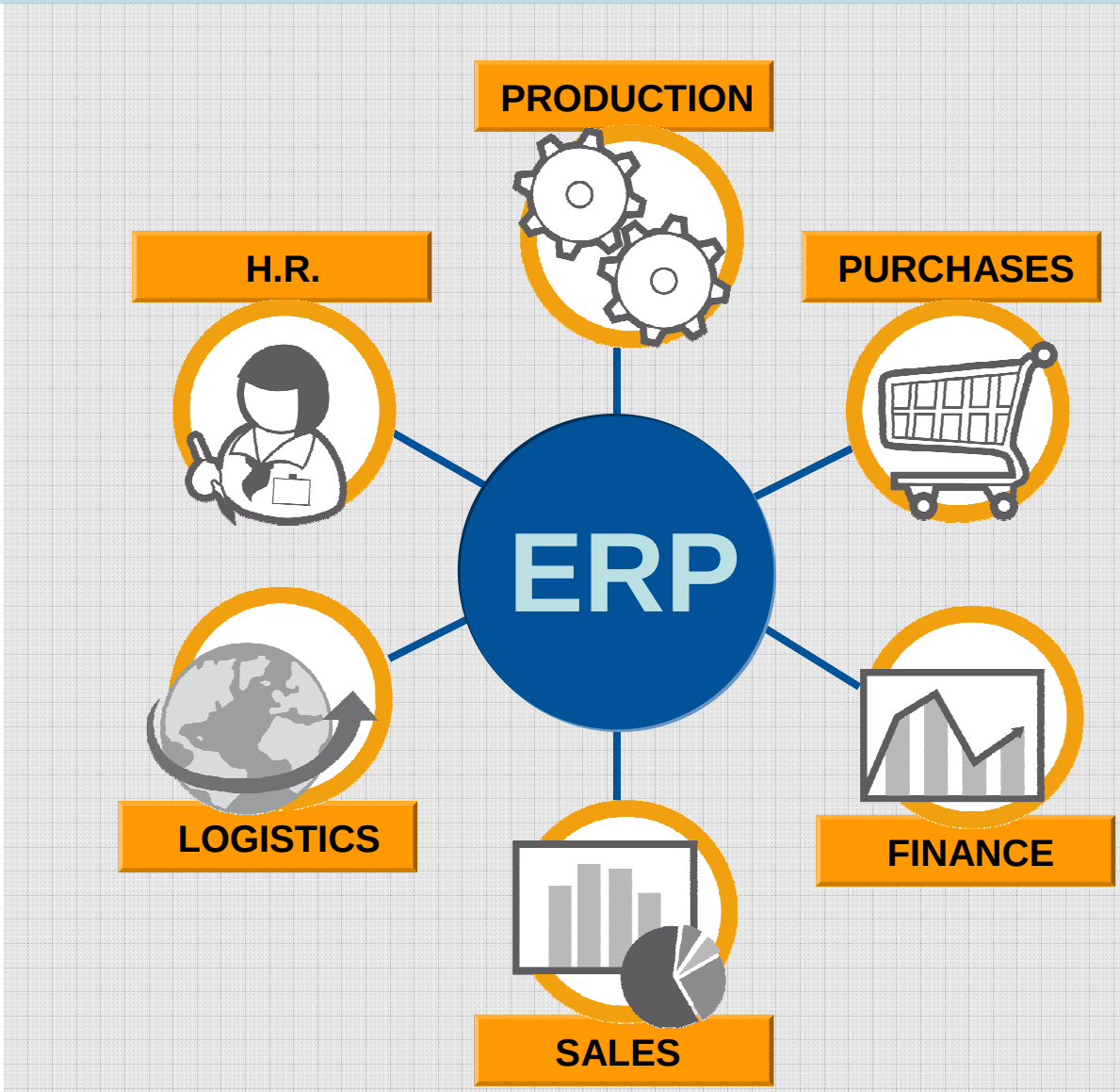
ENTERPRISE RESOURCE PLANNING

ERP is a tool which helps companies to integrate all the processes of their business and to optimise available resources.



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OBJECTIVES OF A WAREHOUSE

Which are the objectives of warehouse management?

- To maximise capacity in terms of space.
- To minimise handling operations.
- To ensure that the management system does not only increase the productive capacity of the warehouse, but also at the same time that its service quality improves.
- To report on a permanent basis of the inventory situation.
- To increase the reliability of our clients.
- To provide shorter delivery frequencies.
- To permit processes with added value for our clients.
- To improve delivery windows for prepared orders.

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What is a WMS?

An IT and management system for storage centres, which is designed to solve the physical and document management of the flow of goods, from their entry in the warehouse until their final exit. The whole process must be based on continuous planning, and provide global tracking of activities and stock control in real time.

Benefits and objectives of a WMS

- Cost-related: better use of space, optimisation of human resources and handling times, minimisation of inventories and adjustment of levels of investment in stocks.
- Service-related: reduction in errors in deliveries to clients, maintenance of turnover in stocks at levels which do not cause overstocks or stock running out, and forecasts of capacity to adapt to future market trends in function of the results obtained in the past. In summary, an optimal service for our clients.

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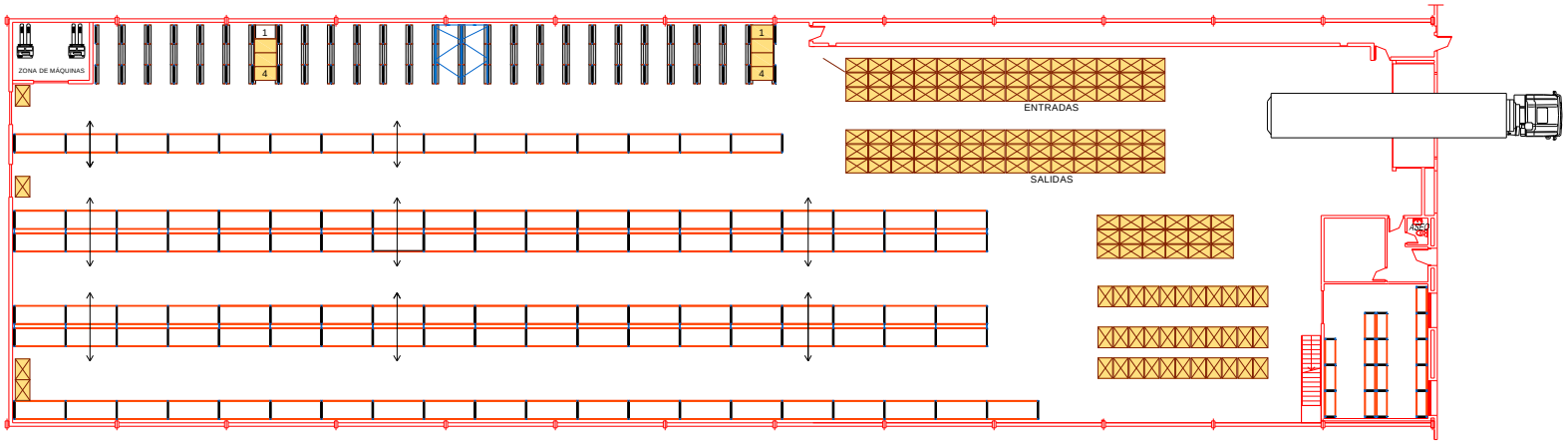
MANAGEMENT WITHOUT WMS: A PRACTICAL CASE



STARTING DATA	
Work shifts	1 shift (8 hours)
Type of work	Management of complete pallets, preparation and dispatch
GENERAL CHARACTERISTICS	
Article types to be managed	500 article types
Pallets in stock	1,500 pallets in stock
Devices for pallets	1 fork-lift truck 1 order picker
Entries	140 pallets a day
Preparation	550 lines a day
Dispatch	135 pallets a day

CONVENTIONAL PALLETS

TRADITIONAL MANAGEMENT

	Goods quantity	Ratio	Work hours
Administration management	140	35	4,0
Physical entries	140	40	3,5
Physical replenishment	125	22	5,7
Picking physique	550	68	8,1
Dispatch management	155	58	2,7

TOTAL STAFF HOURS	**24**
TOTAL STAFF NEEDED	**3**

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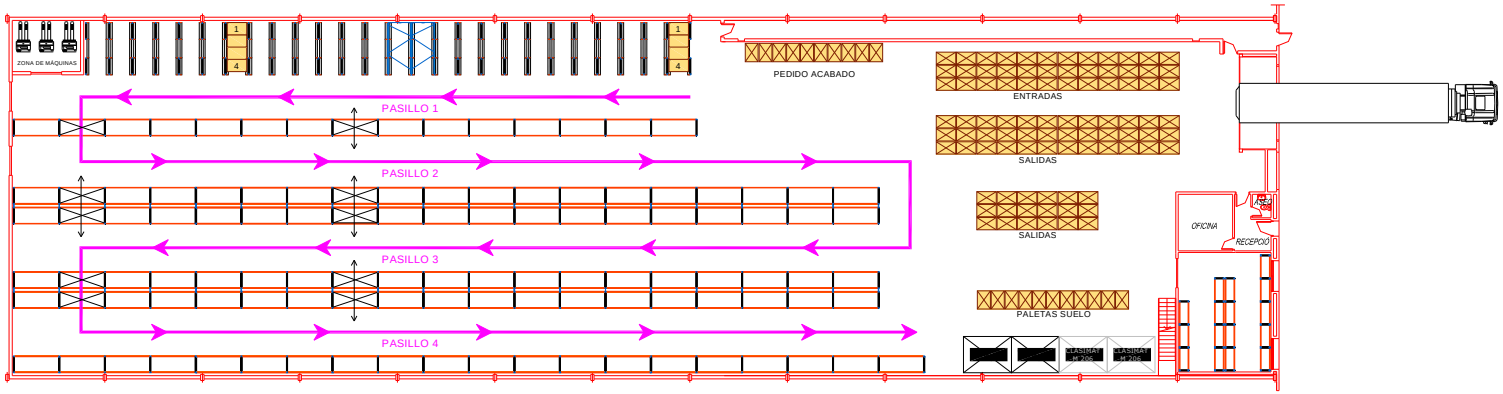
MANAGEMENT WITH WMS: A PRACTICAL CASE



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Preparation	550 lines a day
Dispatch	135 pallets a day

CONVENTIONAL PALLETS WITH EASY

MECALUX EASY MANAGEMENT

	Goods quantity	Ratio	Work hours
Administration management	140	60	2.3
Physical entries	140	48	2.9
Physical replenishment	125	26	4.8
Physical picking	550	109	5.0
Dispatch management	155	72	2.7
TOTAL STAFF HOURS		**17.7**	
TOTAL STAFF NEEDED		**2.2**	

INCREASE IN PRODUCTIVITY: 27.9%

Principal features of organisational improvement

- Improvement in organisation of the unloading schedule.
- Reduction of stocks and permanent inventory.
- Management of storage positions.
- Coordinated preparation and replenishment following warehouse maps.
- Reduction of routes (lower consumption and times used).
- Greater quantity of goods means more complex product searches.
- The quantity of article types is a determining factor which requires the control of batches and expiry dates (which must be entered manually).
- The above improvements have a greater effect, the bigger the surface area and/or capacity.
- Modus operandi and cleanliness in warehouses directly affects the productivity of personnel and the maintenance of installations.

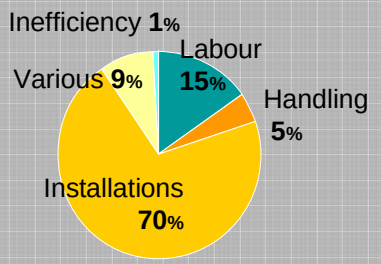
Principal elements of direct and indirect saving

- Speed and flexibility in treatment of goods.
- Reduction in preparation errors.
- Reduction in service window - « A-C » « A-A ».
- Improvement in the management of obsolete stock and time articles spend in the warehouse.
- The WMS provides coverage rates according to each need.
- Decline in unknown losses and losses due to other reasons.
- Optimisation of space.
- Reduction of time spent on inventories (automated regulation of stocks).
- Information on stocks in real time and improvement in sales network.
- Control of operator productivity (incentives).
- Possibility of increasing the amount of annual turnover.

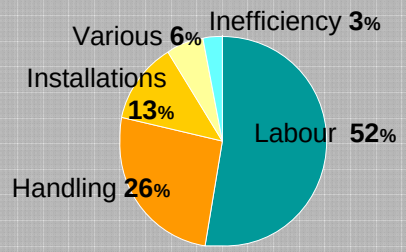
COSTS OF A MANAGED WAREHOUSE

The implementation of a WMS enables a reduction of efficiencies arising from the lack of organisation and method. The annual cost of the installation is brought down and productivity is increased

Warehouse dispatch



Order preparation



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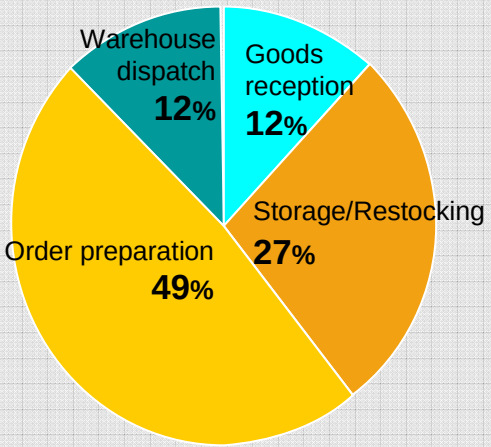
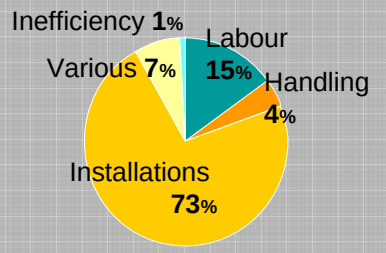
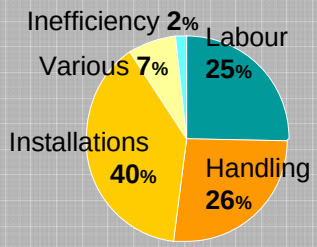


TOTAL YEAR VALUE
€ 959,121

Goods reception



Storage/ Restocking



Profitability of a WMS

The implementation of a WMS enables a return on investment in the short or medium term:

Financial returns

- Inventories not carried out
- Reduction in errors in dispatches to clients
- Less storage space by optimising storage spaces.
- Less investment by controlling stock and turnover more efficiently.
- Fewer operators and less order preparation equipment.
- Less use of paper in the warehouse.

Strategic returns

- Better service for clients.
- Reduction in logistics costs.
- Possibility of incorporating a purchasing portal or other platforms.

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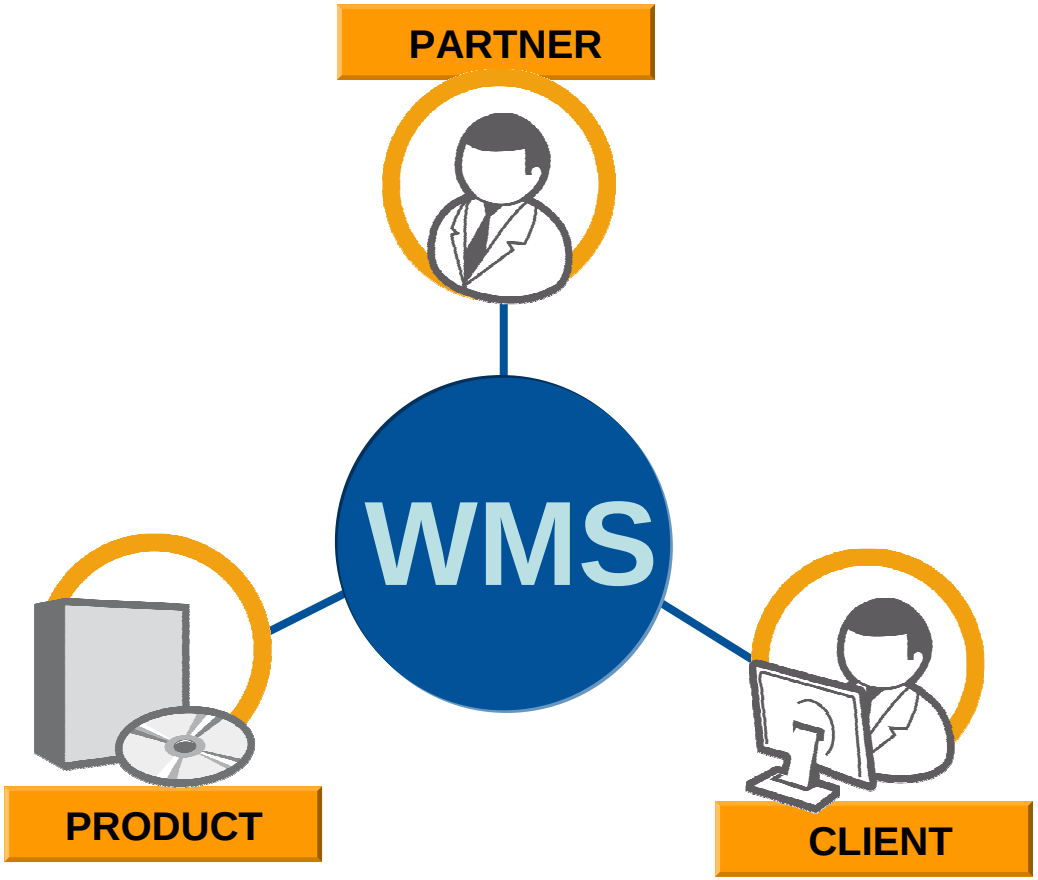
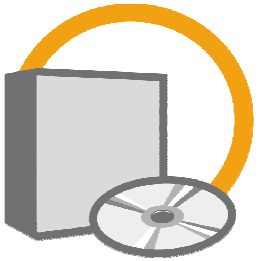
CHOICE OF WMS



CHOICE OF WMS



What should the product (WMS) be?

- It should be developed using standard and cutting edge technology.
- The WMS should be updatable to meet current market trends.
- The worst software is a software without updates.
- The company which develops the WMS must provide guarantees for continuity in the future.
- The management must be scaleable with the possibility to build up modules; so that it doesn't represent a burden for the growth of your company.
- It must be global: multi-client, multi-language, multi-company, multi-warehouse.
- The functionality of the WMS must adapt to the requirements of your company today and in the future.
- It must be sharable and integratable with other systems and other IT tools.

CHOICE OF WMS

What characteristics must the PARTNER fulfil?

- It must understand your business.
- You must feel that he understands you.
- Provide references and certifications.
- Be solvent and have future prospects.
- Provide assistance whenever and wherever your company requires it.
- Be capable of offering a support service and global maintenance for all the IT in your warehouse.

CHOICE OF WMS

What must the CLIENT do?

- Try and adapt as far as possible to the standards of the system. It is more economic, easy to implement and maintain.
- Get involved in the process of selection and implementation. Ensure the participation of all the departments concerned.
- See the WMS as a tool to produce more and in a more comfortable and competitive manner.
- Value the WMS for what it is worth and for what it is useful beyond its cost. A bad tool never recovers its investment.
- Once implemented, update the software at the same rate as the technology develops. Do not move too quickly or slowly in questions of technological advances.

CHOICE OF WMS

The management of the warehouse enables both a significant reduction in costs and an improvement in the level of service. In order to carry this out effectively the following points must be taken into account:

- First and foremost, reorganise, simplify... and then manage. Never automate chaos.
- Management involves on many occasions a change in the method iwhich operations are carried out (Reengineering of processes).
- It is necessary to concentrate on repetitive jobs rather than exception (Selective management).
- All management must be based on a cost / benefit analysis.
- However much management is improved, the operator is still going to be necessary, and, therefore, particular attention needs to be given to the participation, motivation and training of warehouse staff involved in order to achieve the desired results.

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IMPLEMENTATION OF THE WMS

The implementation of a WMS entails...

- Control of operations in real time.
- Automated management of the storage positions: chaotic warehouse.
- Optimisation of routes.
- Minimisation of errors.
- Permanent inventory.
- Tracking.
- “Paperless“ work.
- Transmission of orders to operators.
- Exchange of information with the company ERP.

What is gained from a WMS?

- Increase in productivity.
- Reduction in logistics costs.
- Improvement in service quality.
- Permanent inventory.

IMPLEMENTATION OF THE WMS

Basic characteristics of the warehouse to be taken into account:

- Number of storage positions in the warehouse.
- Number of operators for reception and dispatch.
- Number of operators for picking, preparation and replenishment.
- Movements carried out: pallets entered per day, number of orders and order lines per day...
- Number of article types.
- Type of article types.
- Control of tracking.
- Control of batches, expiry dates...
- etc.

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What questions should we ask when choosing a WMS?

- Will it meet the needs of my business?
- Will it permit a future expansion of my business?
- Will it permit a more advanced technological development?
- Is it a standard or non-standard product?
- Is the system adapted to the operations which I perform in my warehouse?
- Will it reduce the unit handling cost and the handling time?
- Will it bring down general storage costs?
- Is it suitable for the correct management of my stocks and am I informed about this on a permanent basis?

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CONTENTS LEVEL 2

- Introduction
- Modules
- Functionalities
- Implementation methodologies
- Architecture
- Conclusions

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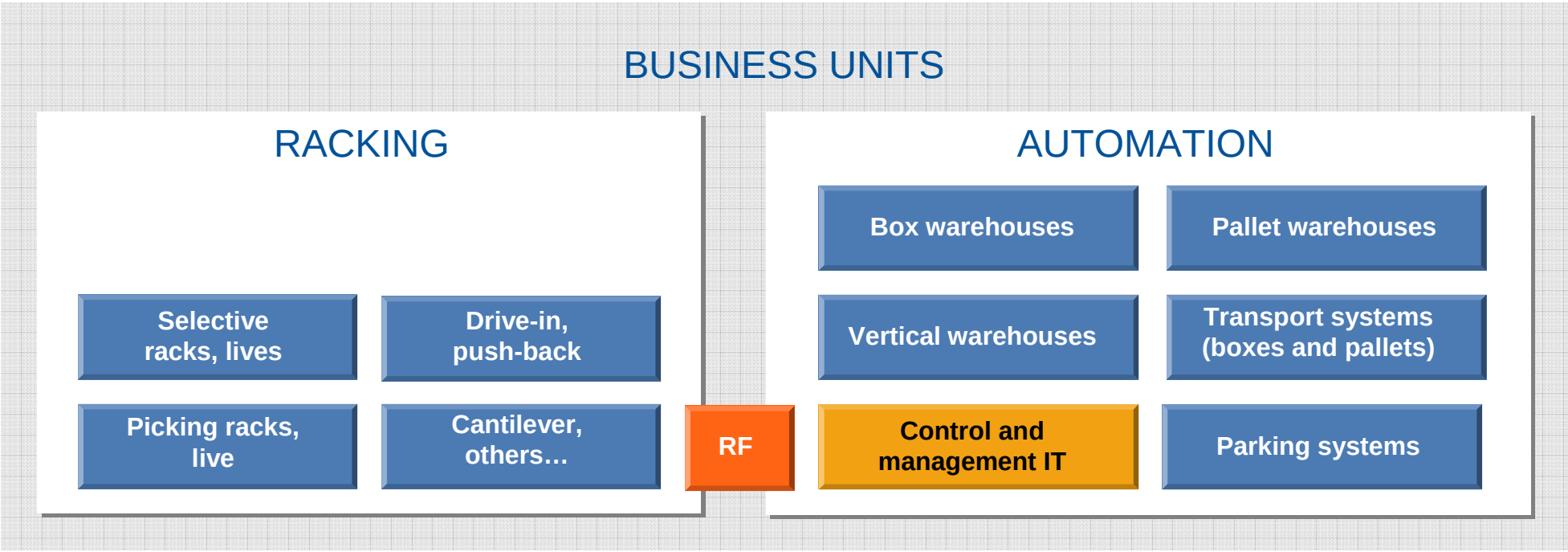
COMPANY INTRODUCTION

Mecalux is a multinational engineering company with a history of more than 40 years. A global market leader in industrial racking, it is ranked among the top five players in storage automation in the world.



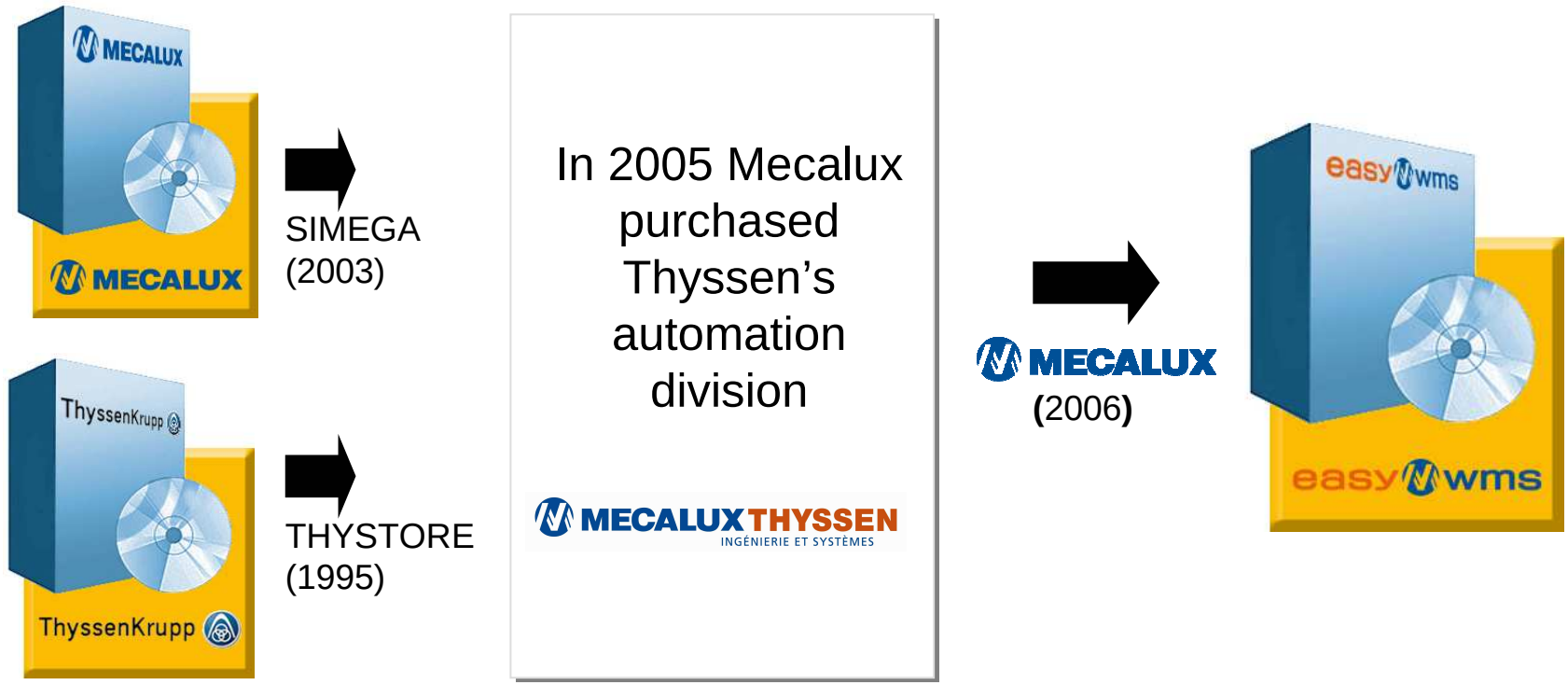
PRODUCT INTRODUCTION

easy wms is Mecalux's Warehouse Management System (WMS). It is designed for conventional warehouses without automated devices guided by radiofrequency (RF) terminals.

- Solves the problem of the physical management of goods
  (from entry to exit and all processes in between)
- Provides a set of powerful tools
  (makes the job easier and increases productivity, efficiency and quality of service)
- Allows greater control over warehouse stock
  (everything which enters or exits is registered, availability of online stock)
- Helps to reduce human errors
  (provides guided movements, help tools and up-to-date information)

PRODUCT HISTORY

easy wms was created in 2006 as a new product based on the experience and best practices of Mecalux's WMS (SIMEGA) and Thyssen's WMS (Thystore).



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easy wms

Application Updater

Tools

- Installers
- Label printers
- PTL manager
- Pick to voice manager
- Layout simulator
- Importer / Exporter

Management console

(PC main screen)

RF module

(RF terminal client screens)

GALILEO

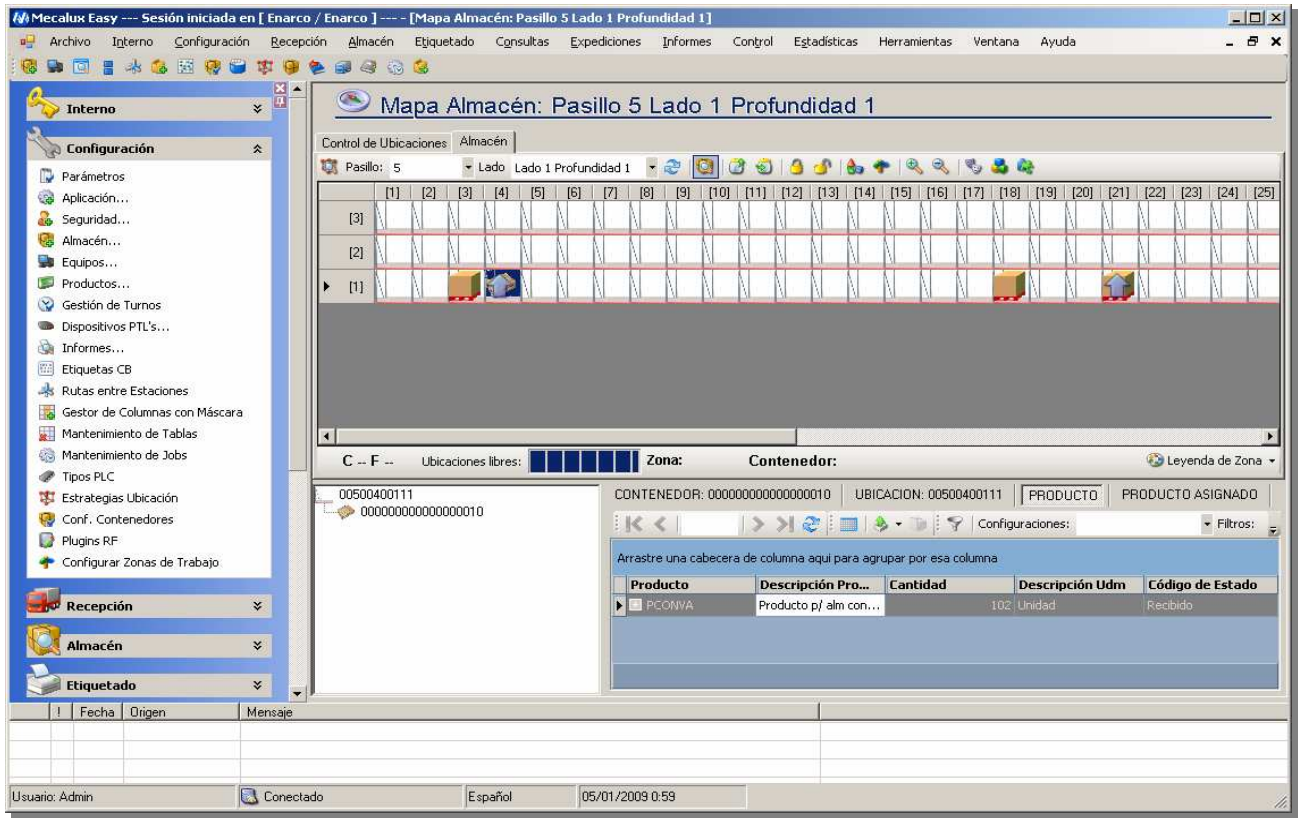
(communications with robots + SCADA)

GNA

(communication with ERP)

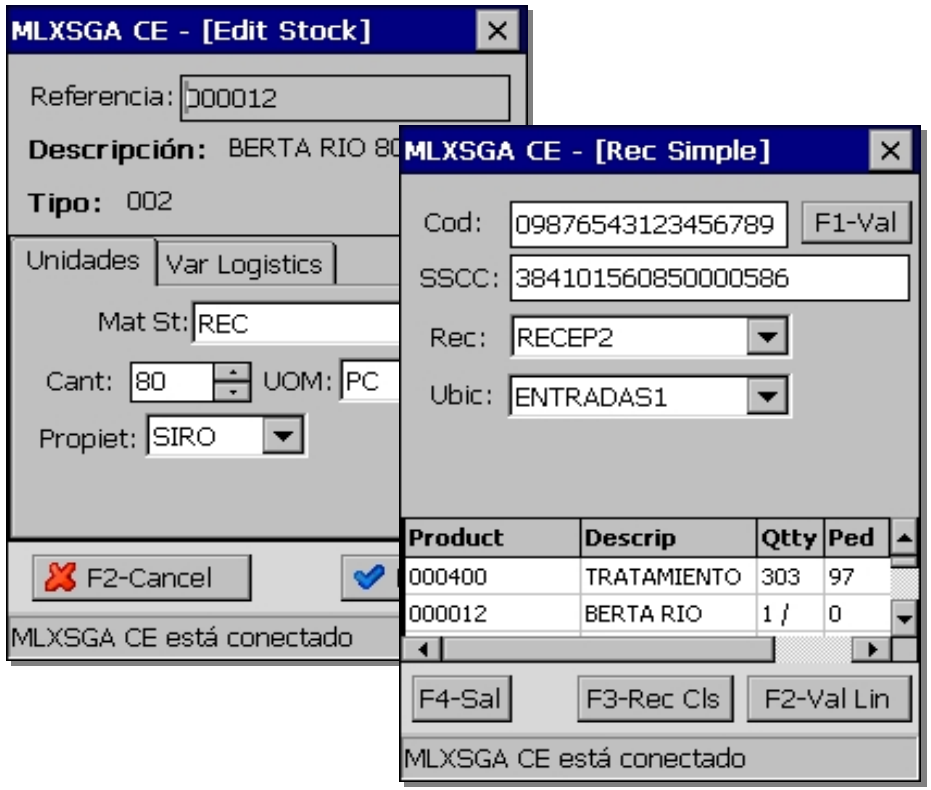
MANAGEMENT CONSOLE

This is the core module of the application. Here, the warehouse, workflows, products, containers, clients, etc. are configured.



RADIOFREQUENCY MODULE

This is the RF module of the application. It contains all the functionalities needed by the operator to carry out any job inside the warehouse.



GNA – COMMUNICATIONS WITH THE ERP

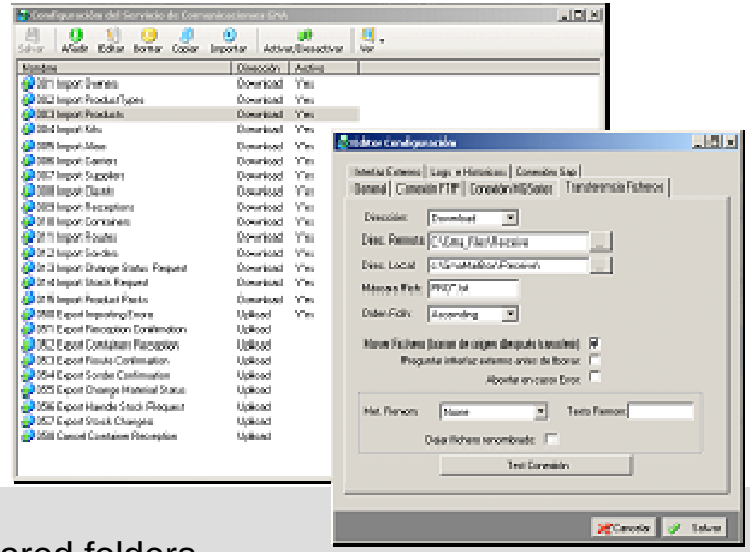
This is the management module for communication interfaces with the client's ERP.

Mecalux communication protocol

The system allows communications with the ERP to be carried out by file exchange protocol defined as standard by MECALUX without any modification and adaptation required.

Client communication protocol

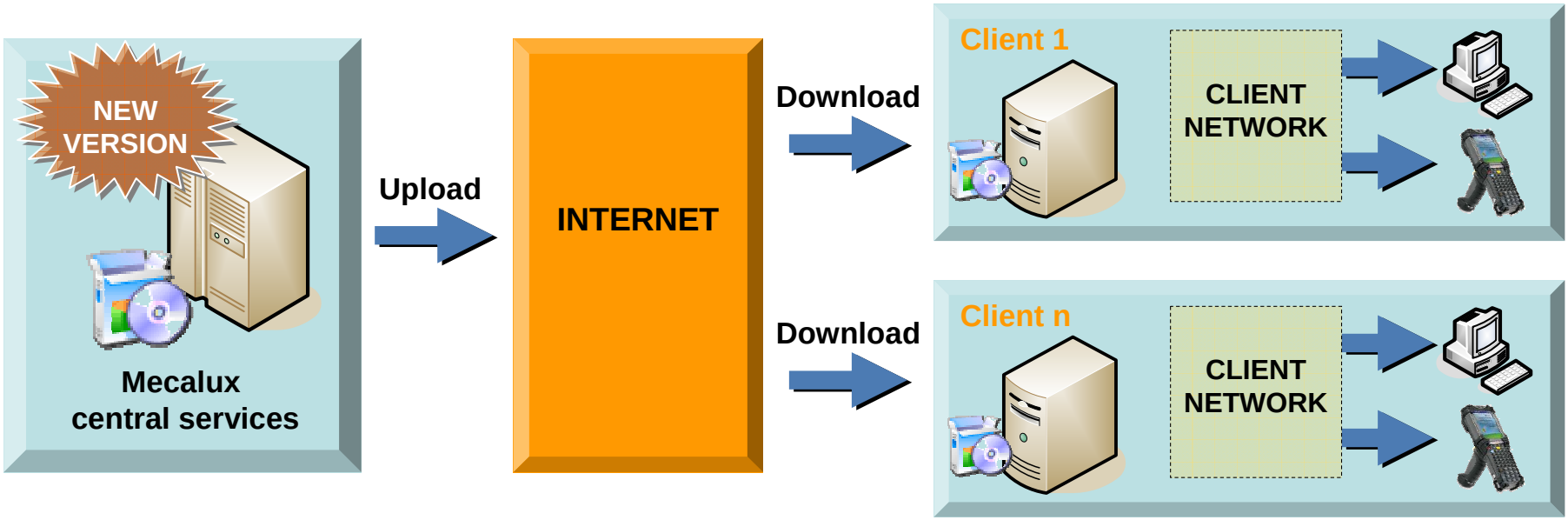
The system also allows customizations to be adapted to the client's ERP format (level of customization must be calculated when giving an estimate).



Communication channels		
	Shared folders	Windows' shared folders protocol is used
	FTP	FTP (file transfer protocol) is used
	SAP IDOC	WM-SAP IDOC via RFC is used
	MQ-Series	IBM MQ-Series is used

APPLICATION UPDATER

This module is responsible for implementing the automatic updates of the other modules of the application. These are carried out by Internet and are distributed automatically to RF and PC terminals. This module is used at the start of the application in order to install the latest version available, and it is also used by remote-maintenance technicians to apply critical updates.



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- Introduction
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N.B.: Items marked with symbol **(A)** belong to the self-installation functions provided in the Mecalux Easy Level 0 pack (Autorun).

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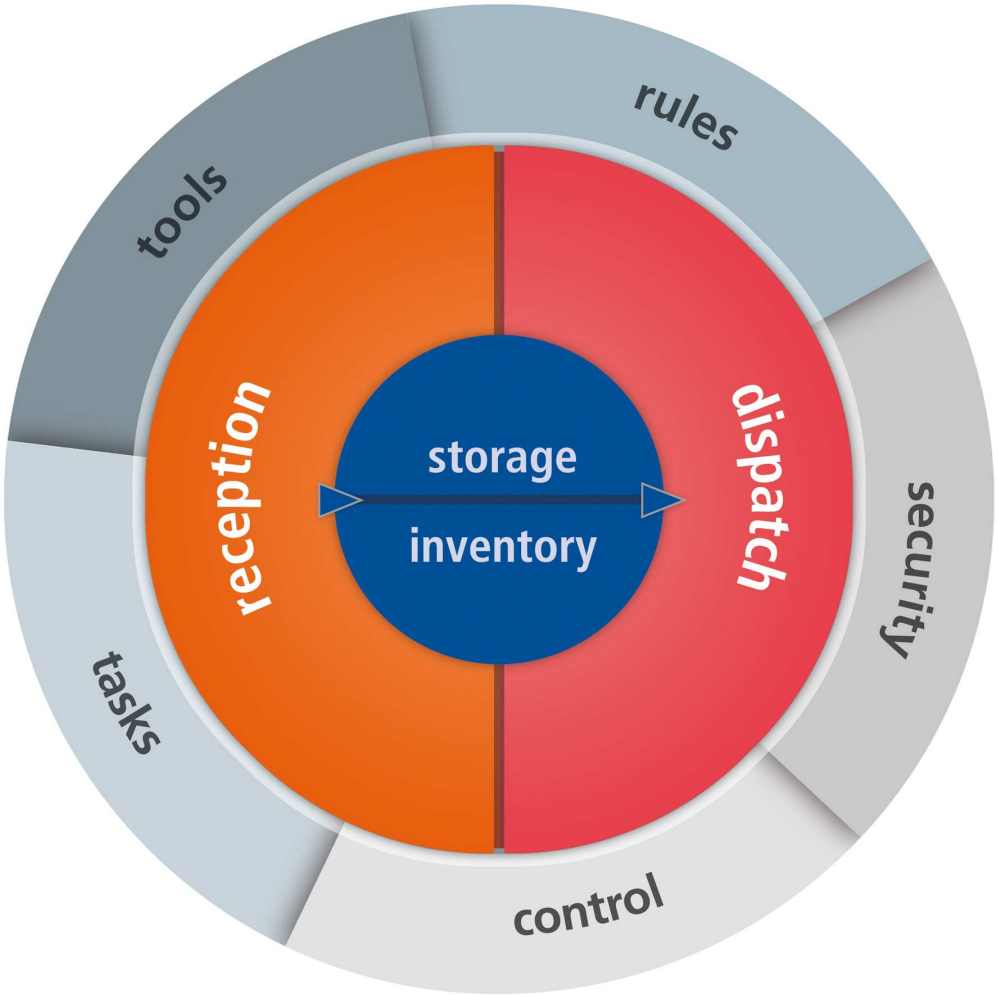
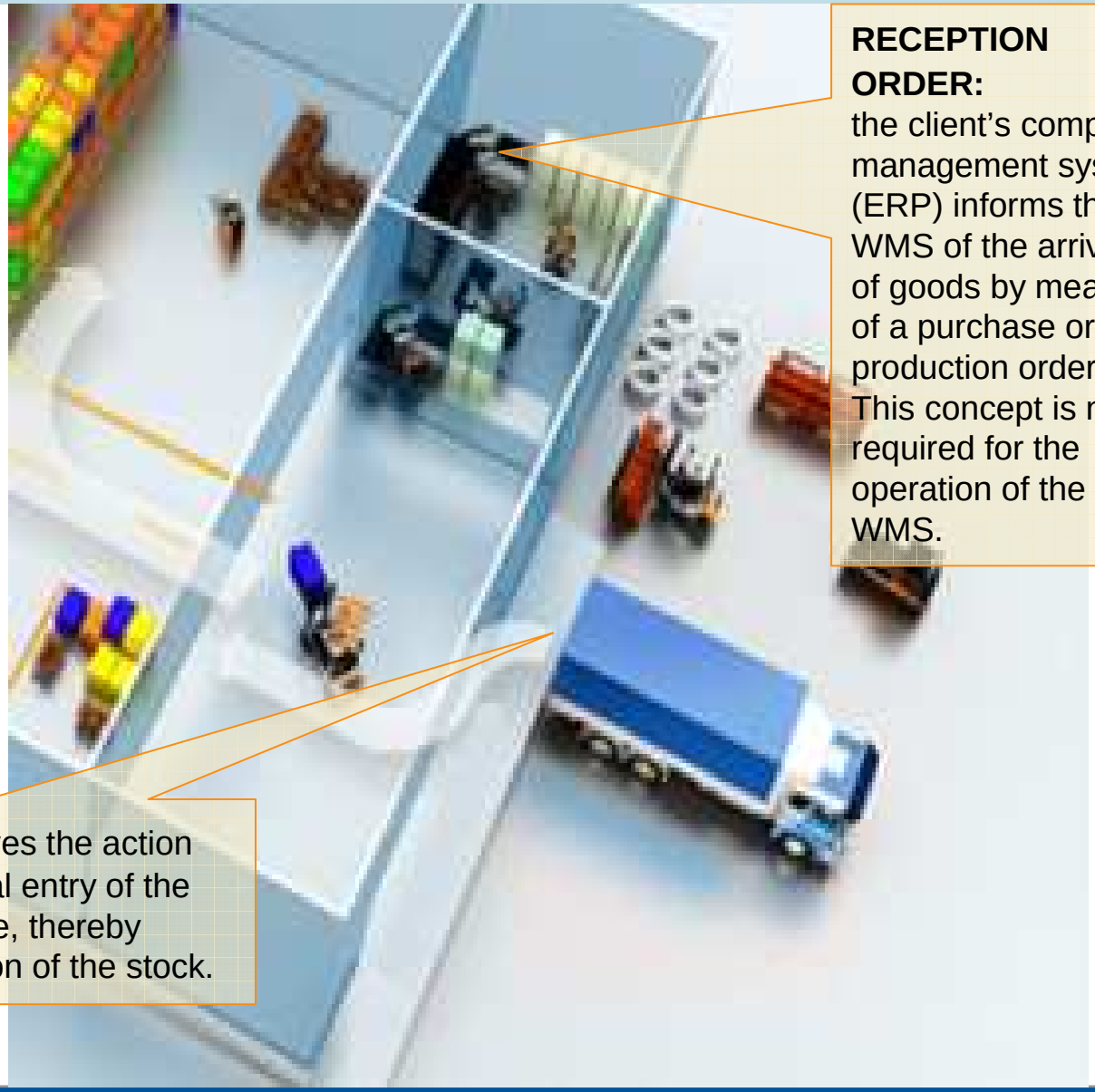


RECEPTION

Reception is the process which enables stock to be entered into the warehouse and to link this stock to the corresponding reception order.



RECEPTION ORDER: the client's company management system (ERP) informs the WMS of the arrival of goods by means of a purchase or production order. This concept is not required for the operation of the WMS.

RECEPTION: this involves the action of confirming the physical entry of the product in the warehouse, thereby generating the registration of the stock.

RECEPTION

Easy WMS speeds up the reception of goods from the notification of the reception order by the company management system (ERP) to the physical entry.

Planning of unloading

- Planning of unloading capacity for reception by time band. **(A)**
- Reports with graphs showing the degree of compliance with the delivery by the carrier or provider.

Reception

- Possibility to receive goods without a prior entry order, i.e., manual registration of reception. **(A)**
- Possibility to create any number of reception jobs associated with an entry order. In this way, the same reception order can be received in multiple deliveries.
- Possibility to rectify forecast quantities due to an excess or shortage of goods (shipment errors).
- Possibility to carry out operational reception through radiofrequency terminal.

Logistics data capture

- Confirming the information on the reception order to prevent reception errors. **(A)**
- Manual creation of new articles from the WMS itself, if they do not exist in the system.
- Possibility of creating new forms of article presentations (packs, pallets, etc.) related to each product.
- Control of batch, series number, expiry date... during the reception for articles with the required logistics attributes.
- Temperature and weight control, during the reception for articles with the required logistics attributes.
- Checking the owner of the goods.

RECEPTION

Reception documents

- Printout of standard reception reports. **(A)**
- Printout of customised reception reports.
- Printout of differences to compare the goods received with those expected (delivery errors report).

Labelling with barcodes

- Label printing of storage units (container) with a standard format. **(A)**
- Label printing of storage units (container) with a customized format.
- Label printing of product with a standard format. **(A)**
- Label printing of product with a customized format.
- Handling of most label printers on the market. **(A)**

Closure of reception jobs

- Closure of entry orders and reception jobs associated with them manually. **(A)**
- Cancellation of reception jobs in order to execute partial closures of the reception order.
- Closure of entry orders and reception jobs associated with it in the management system (ERP).

Returns

- Manual registration of returns. **(A)**
- Registering returns associated with a reception order.
- Handling containers and their location according to the rules established in specific areas designed for quality control.

RECEPTION

Production entry

- Recognition of containers sent from production lines using labels in EAN 128 format.
- Cross-docking management: the lack of stock to serve an order will trigger a movement directly from the reception point to the dispatch hub in order to finish it without having previously located the goods.
- Dimensional control of the container (height, control of storage spaces, control of blocks) in automated warehouses.
- Management of delivery to reconditioning work stations in order to fix dimensional and quality errors in storage units.
- Possibility of notifying the registration of goods in the corporate management system (ERP) during entry processes.

Gauge error control

- In automated warehouses with gauge control available.
- Visual representation of gauge errors.
- Printout of reports and statistics of gauge errors.

Communications with the ERP

- Automatic notification of received goods to the corporate management system (ERP).
- Automatic notification of located goods to corporate management system (ERP).

Easy WMS enables location rules to be configured from a series of selectable conditions.

Location rules manager

Location rules, i.e., the behaviour of the location process, may consist of various strategies which may or may not be used depending on needs **(A)**:

- By area and dimensional characteristics.
- By product and/or presentation.
- By provider.
- By owner.
- By product turnover.
- By status of the goods.
- By weight.
- By hazardous materials.
- By temperature.
- By container type.
- By product type.

STORAGE

Cross-docking

The lack of stock to serve an order triggers a movement directly from the reception point to the dispatch area in order to finish it without having previously located the goods.

Consolidation

This enables goods to be consolidated by storage unit or article type, and moves stock from a storage space or a storage unit to another space in order to optimise warehouse volume. The user can launch consolidation orders to compact goods according to the following criteria:

- Product. **(A)**
- Owner.
- Batch.
- Series number.
- Expiry date.
- Warehouse areas.
- Aisle.
- Interval of coordinates.

Tracking

All movements done with the stock and storage units are recorded, thus achieving total tracking of goods within the warehouse from entry to exit.

STORAGE

Automatic reorganization

In automated warehouses, the system can reorganize the storage units in the aisles by scheduling the tasks by time range or during idle production times.

Replenishment

- Manual replenishment. **(A)**
- Automatic replenishment in picking storage units so these always have stock.

Manual stock reservations

The system performs manual stock reservations using the following criteria:

- Associating a particular stock with a client. This stock is only used to serve the specified client.
- Associating a particular stock with an exit order. This stock is only used to serve this order.

INVENTORY

Easy WMS facilitates the management and control of the warehouse stock and the changes in the stock's status (correct, expired…).

Management of storage spaces

Organising the route to the storage space in order to optimize the movement to the destination. **(A)**

- Possibility of the operator to manually change the storage space suggested by the system.
- Replenishment: the system generates automatic replenishment of picking areas which are configured to keep a permanent stock.

Dynamic turnover management

- Calculation of the turnover for each article in an interval of selected dates and in function of the movements produced. Generation of a report with suggestions for changes in stock turnover. **(A)**
- Generation of stock relocation tasks based on changes in product turnover or changes in the goods status.

L&F location management

The system has a virtual location to manage problematic stock. When the containers leave the system, they are sent to this location. This enables them to be manually unregistered or retrieved when desired.

INVENTORY

Display of the warehouse and its stock

The system has a graphical tool which displays pictures of the racks showing the stock located in them. It allows status and locations be defined and changed, as well as making reservations and blocks of locations and containers. **(A)**

Counts

- The user can generate and launch counts (warehouse inventory tasks) according to the following characteristics **(A)**:
  - Owner of product or warehouse
  - Product
  - Storage unit
  - Batch
  - Series number
  - Aisle
  - Warehouse area
  - Warehouse coordinates interval
- The count can be generated with the following types:
  - Informed **(A)**
  - Blind
  - Partially informed

COUNTS

The aim is to carry out count tasks (stock inventories). These can be performed in two different ways:

- **Manual:** at the request of the user, i.e., consulting the contents of a storage unit or location from a radio-terminal.
- **Automatic:** generated by the warehouse manager, who assigns this task to an operator. When generating the count task, the user can define the type of count to be applied.

Types of counts

- **Informed:** the system provides information on the product and its amount, and the operator confirms or corrects this data.
- **Partially informed:** the system provides information on the product, but not on its amount, and so the operator has to enter the amount after carrying out the count.
- **Blind:** the system does not give information on the product or the amount, and so the operator has to enter all the data.

The operators performing count tasks, and who have permission to do so, can adjust and correct the stocks. A modification in the warehouse stock will automatically generate a report on the stock variation to the client's corporate management system (ERP).

DISPATCH

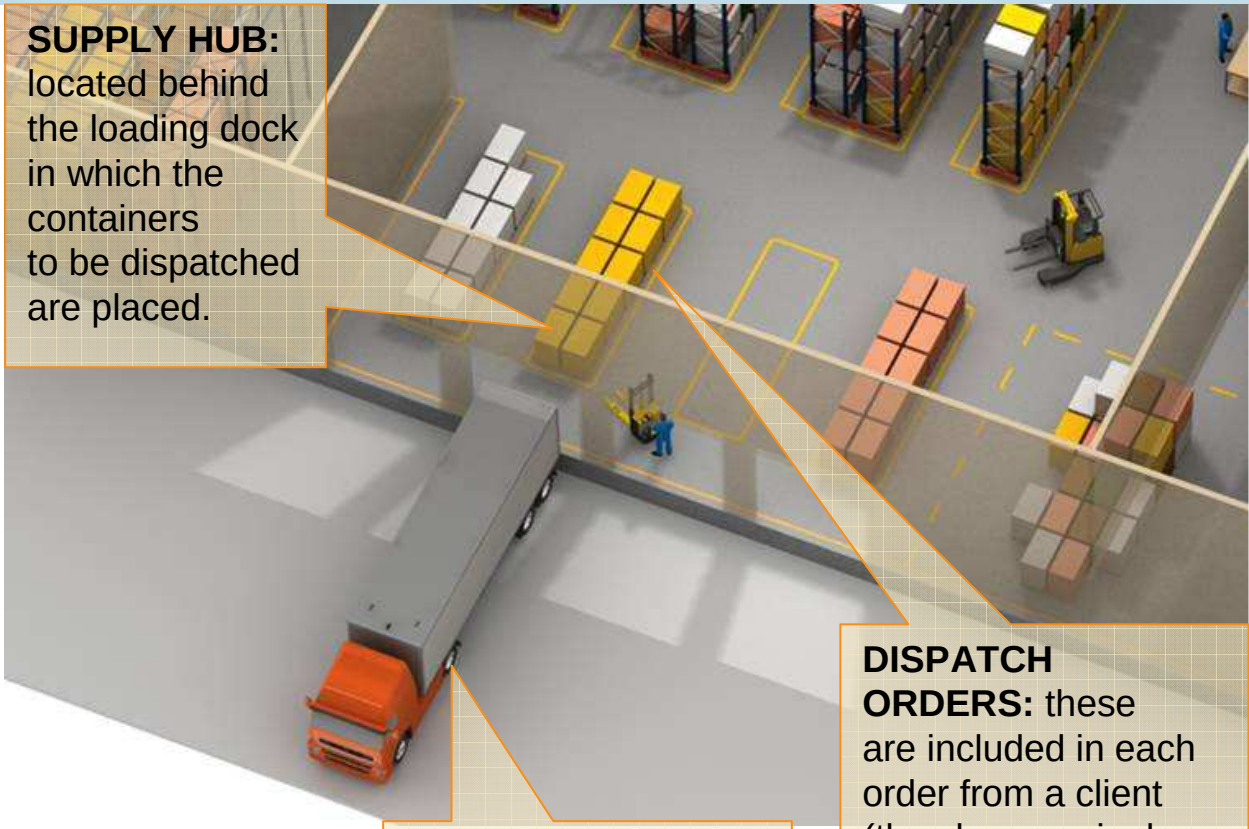
This process involves the exit of goods from the warehouse in function of the preparation of orders. Extraction can be done in two ways:

- **Manual:** the material is extracted, or picking operations are performed manually from the radiofrequency terminal, without associating the material with any dispatch order, i.e., the corporate management system (ERP) does not report the stock exit to the WMS.
- **Automatic:** the goods are extracted by means of a dispatch order, i.e., the ERP reports the stock exit to the WMS and, therefore, the order is prepared by the WMS.

DISPATCH

Automatic

This working mode is used when dispatch orders are sent from the ERP to the WMS to carry out the exits (order preparation) and the subsequent dispatch of goods. The system can handle the following concepts:



SUPPLY HUB: located behind the loading dock in which the containers to be dispatched are placed.

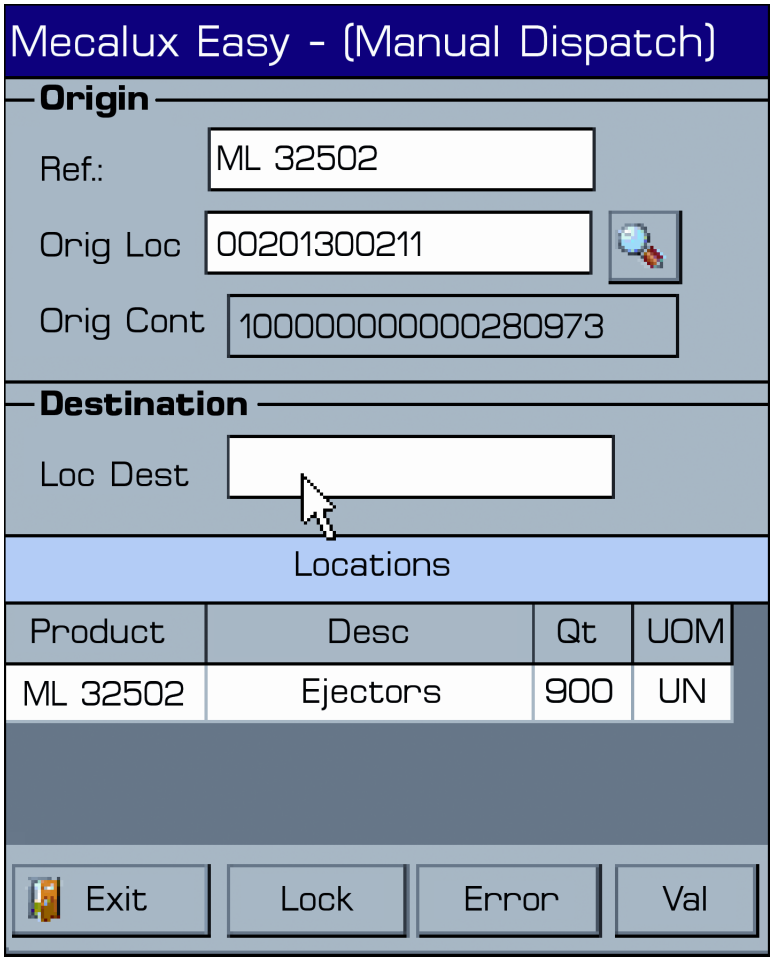
ROUTE: route followed by a carrier when leaving the warehouse and, usually, carrying more than one order.

DISPATCH ORDERS: these are included in each order from a client (they have a single unloading point).

STOP: each unloading point made by the vehicle transporting the client's order.

Manual

The operator uses a list (usually printed on paper from the ERP) with the goods to be collected. The exit operations are recorded by the radiofrequency terminal (RF) and the system then discounts them from the stock.



Terms used

- **Route:** the client's orders are consolidated in a single form of transport and sequenced by stops. The WMS manages the loading of the vehicles according to their stop sequence, beginning by loading the vehicle with the last order to be delivered.
- **Dispatch order:** each of the client's orders or exits of goods for any reason - generally due to purchase, warehouse transfer or return to the provider. If it is associated with a route, it is necessary to specify the stop number (stop sequence). There may be more than one dispatch order or purchase order for each stop.
- **Stop:** each of the unloading points for an order within a route. The system extracts the goods in reverse order from the stop so as to ensure that the first load corresponds to the last stop.
- **Dispatch orders grouping:** the system enables the dispatch orders to be grouped in two ways:
  - **Order waves:** grouping the orders so as to be able to execute all the exit orders included together in a wave. This optimises the movements of the operators when executing the order, thus achieving a higher level of productivity. The exit orders grouped in waves are handled individually, indicating to the operator the amount of product to be extracted for each order.
  - **Order groups:** the sum of all exit orders so that these are executed for the total amount of goods to be prepared. That is, the operator is informed of the total product amount picked, which is the result o adding all the orders grouped together. The products then need to be ungrouped in their original orders.

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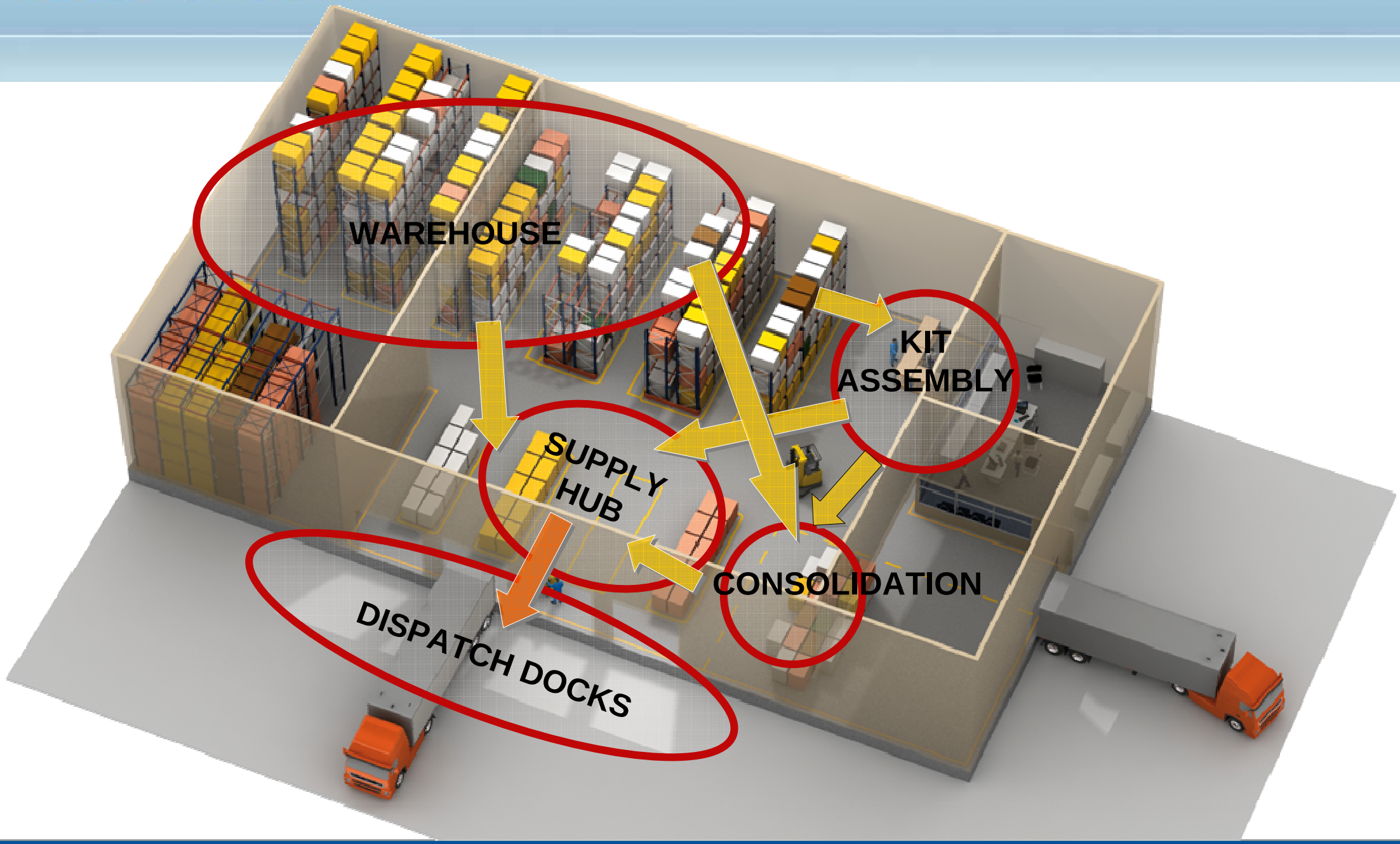


DISPATCH

This process involves the exit of goods from the warehouse in function of the preparation of orders.

Dispatch routes / orders

The system is capable of receiving the dispatch orders through a communication interface. These are the equivalent of sale orders or goods exits. They may contain data on the specific containers which are going to leave the warehouse or solely on the quantity of goods by article type, along with the required logistics data.

- Executing the exit of goods manually. **(A)**
- The system enables time schedule planned dispatches. **(A)**
- The system permits reports with graphs to be printed in order to visualize the degree of compliance. **(A)**
- The system allows customised reports to be printed.

Order preparation

Exit of goods according to the following forms:

- Management of full container exits. **(A)**
- Management of delivery routes (transport). All the orders forming a delivery route are grouped together.
- Management of full container exits organising the order by lines.

DISPATCH

Picking

Performing the picking by radiofrequency terminals or in fixed stations by PC. **(A)**

- Management of different modes of article presentation.
- Management of product stacking.
- Management of the container-client and management of returning the container client to the warehouse.

Pick / Put to Light

- Management of PTL (Pick and Put to Light) devices to perform picking processes.

Desk exit

Management of orders directly generated in the sales desk at the request of the client and dispatched by radiofrequency. The system manages whether the product is accepted or not by the client. If the product is rejected, the system manages its relocation.

Manual stock reassignment

Manual reassignment of stock between orders from different clients (the orders are readjusted in the dock in order to serve a client urgently).

Loading lorries

- The system manages the loading of packages from every order in the transport vehicle assigned, thus avoiding delivery errors.
- Management of delivery routes.

DISPATCH

Dispatch documents

- Delivery orders by order or order group. **(A)**
- Report on differences between ordered and served goods. **(A)**
- Report on goods by container (packing list). **(A)**
- Report on the make-up of a consolidated dispatch in order to divide it manually into orders.
- List of containers, article types and orders loaded in a lorry.
- Creation of customized reports.

Labelling goods

- Labelling containers with standard format. **(A)**
- Labelling containers with customised format.

Communications with the ERP

- Automatic notification of the goods dispatched to the company management system (ERP).
- Automatic notification of the goods loaded in the transport vehicle to the ERP.

TOOLS

A number of tools make it possible to adapt and customise the application according to the client's own criteria, as well as to apply the required security rules.

Workstation management

Ability to manage blocks and basic operational changes on the system's workstations (PC, radiofrequency terminals, etc.).

Report designer

The system is equipped with a report designer installed in the application itself. This allows the client's IT staff to adapt the existing reports to their needs or to create new reports. Within the same installation, standard and customised can be generated.

Label designer

The system has a label designer. This enables the client's IT staff to adapt the label format to their own requirements.

TOOLS

Security

The system enables the management of users and user groups by managing the access security of the application, the use and visualization of its different options and restrictions on the operations placed on each user. The management of user permissions, in the case of multi-warehouse structures, can be independently configured for each warehouse.

Generic queries

The system has a large collection of generic queries and reports which can be adapted by the clients according to their information requirements.

Browsing

Ability to access the different information levels from the same screen, facilitating improved ergonomics of the application.

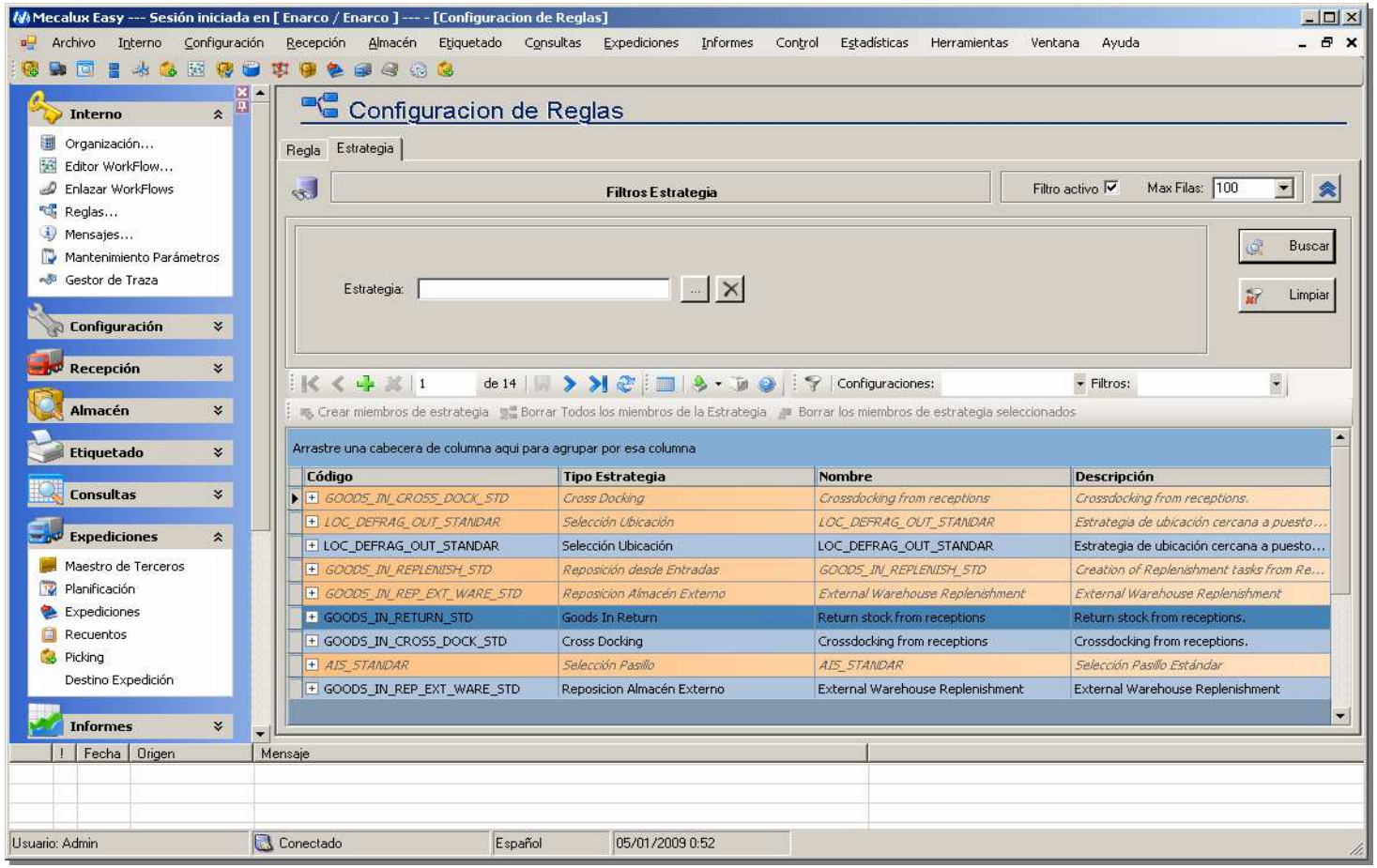
Ease of use

The system can be used from the radiofrequency terminal, a fixed PC station or with the assistance of paper support.

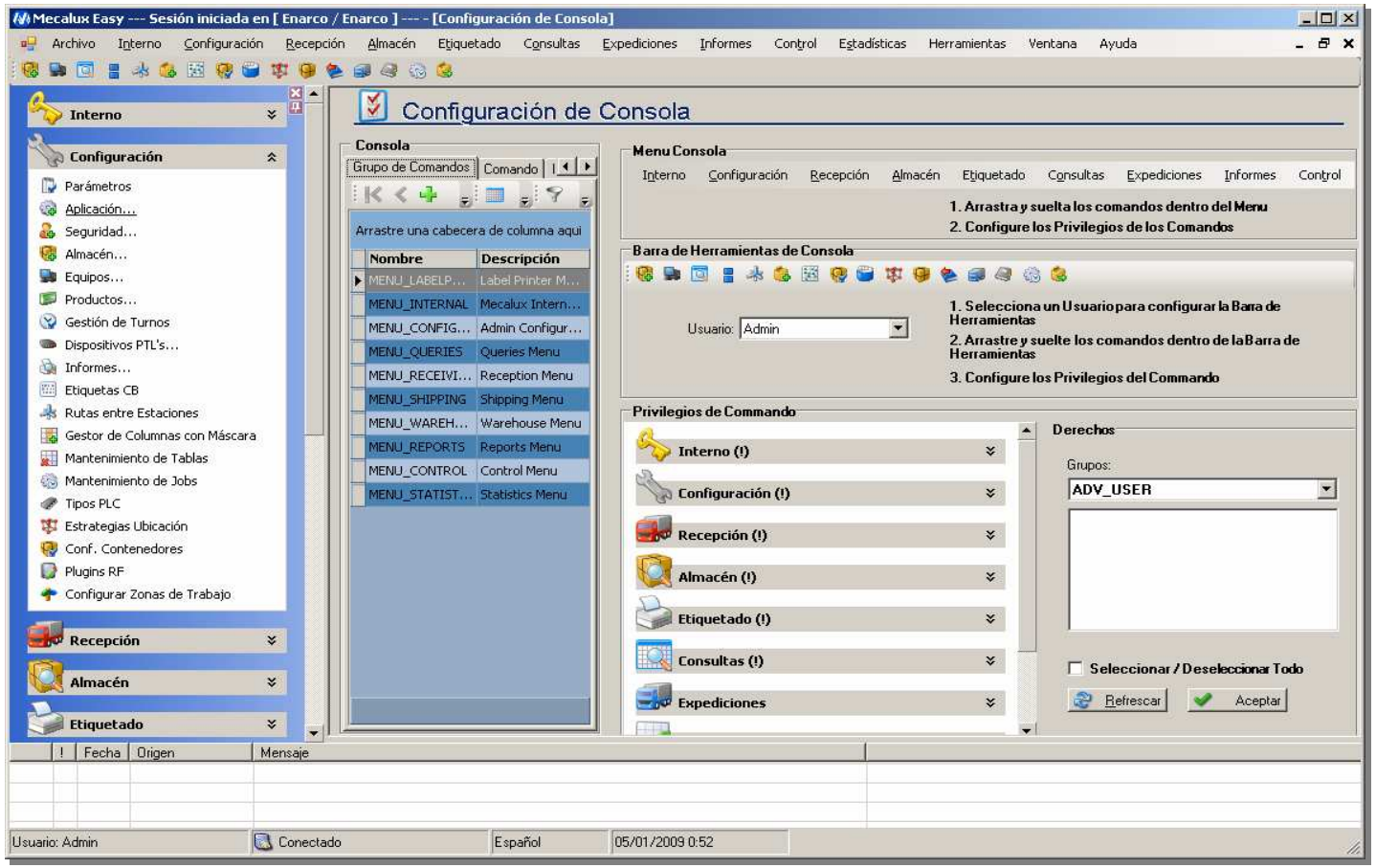
Reports and statistics

The system has a report designer installed in the application. This allows the client's IT staff to adapt the existing reports to their needs or to create new reports. Within the same installation, standard and customised reports can be generated at the same time.

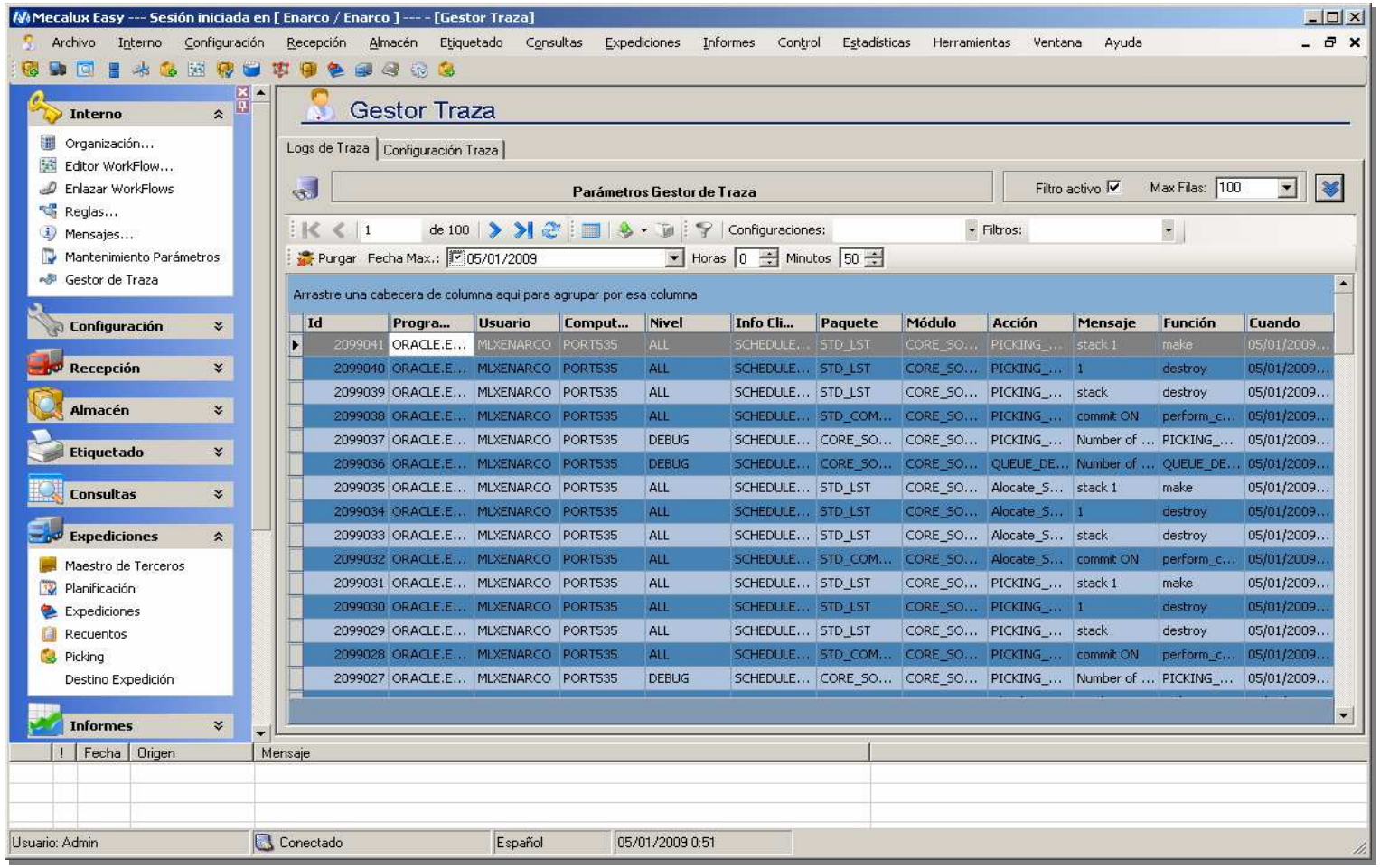
Location rules and strategies editor



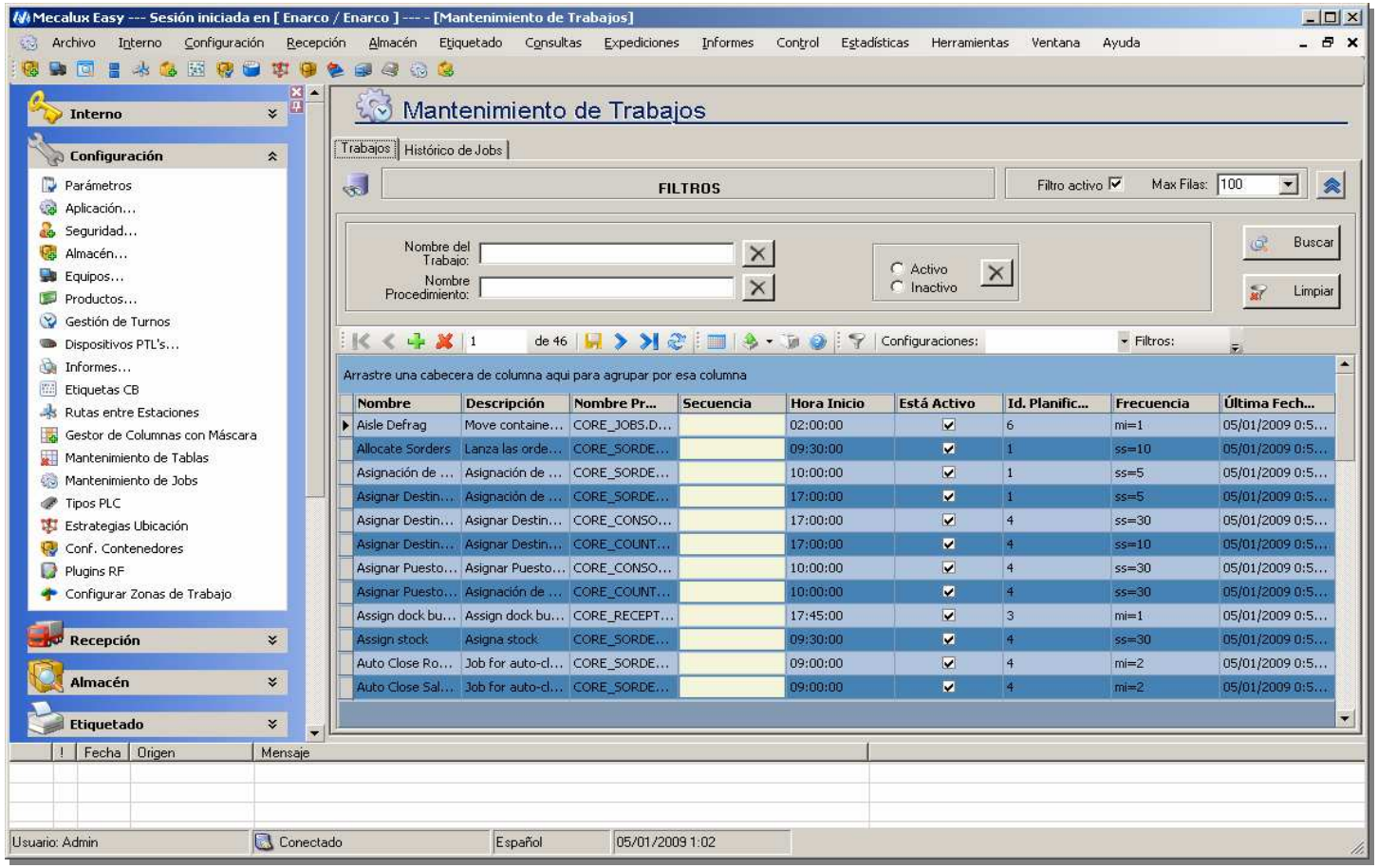
Plug-ins and graphic interface configurator



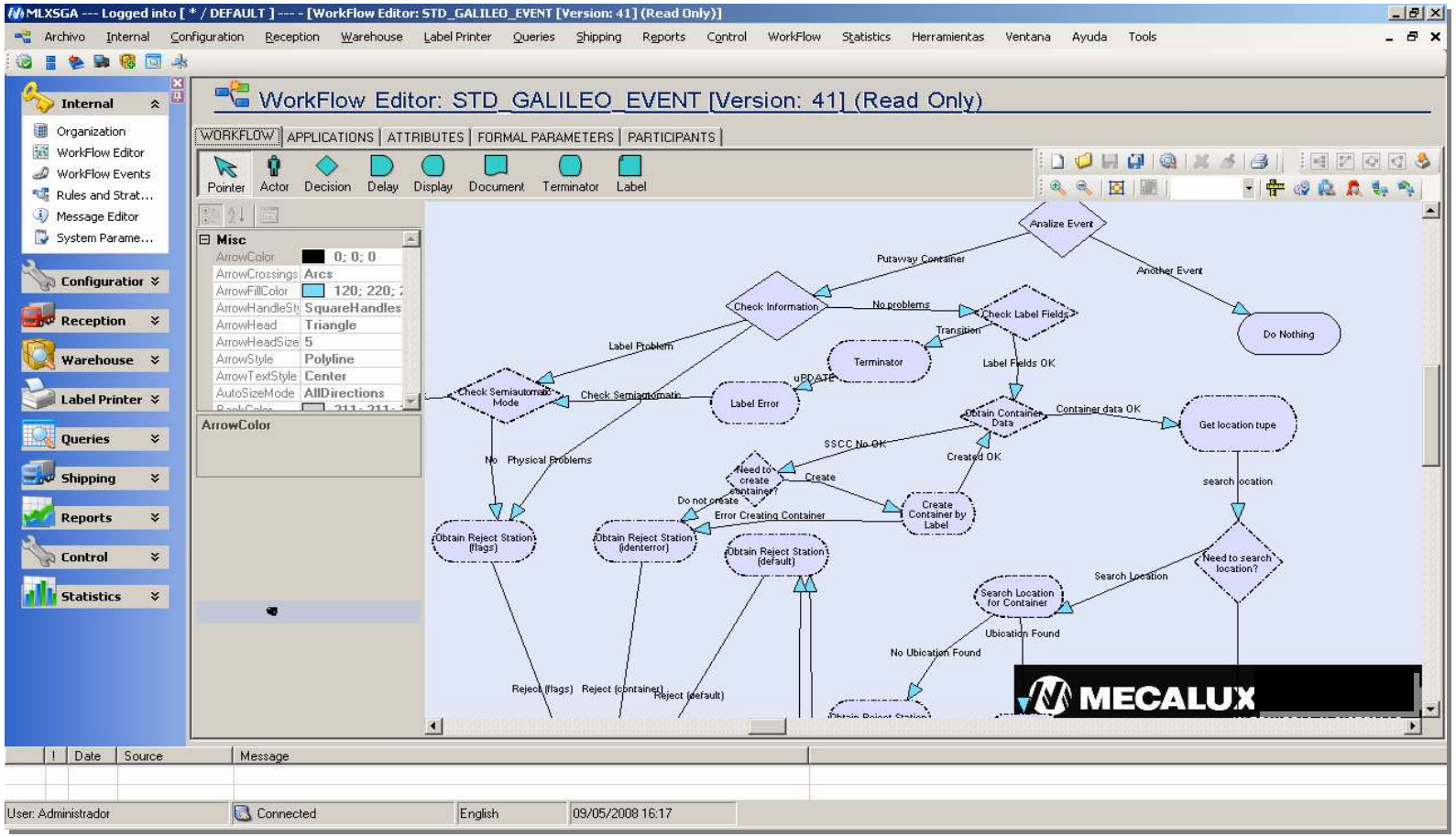
Tracking manager



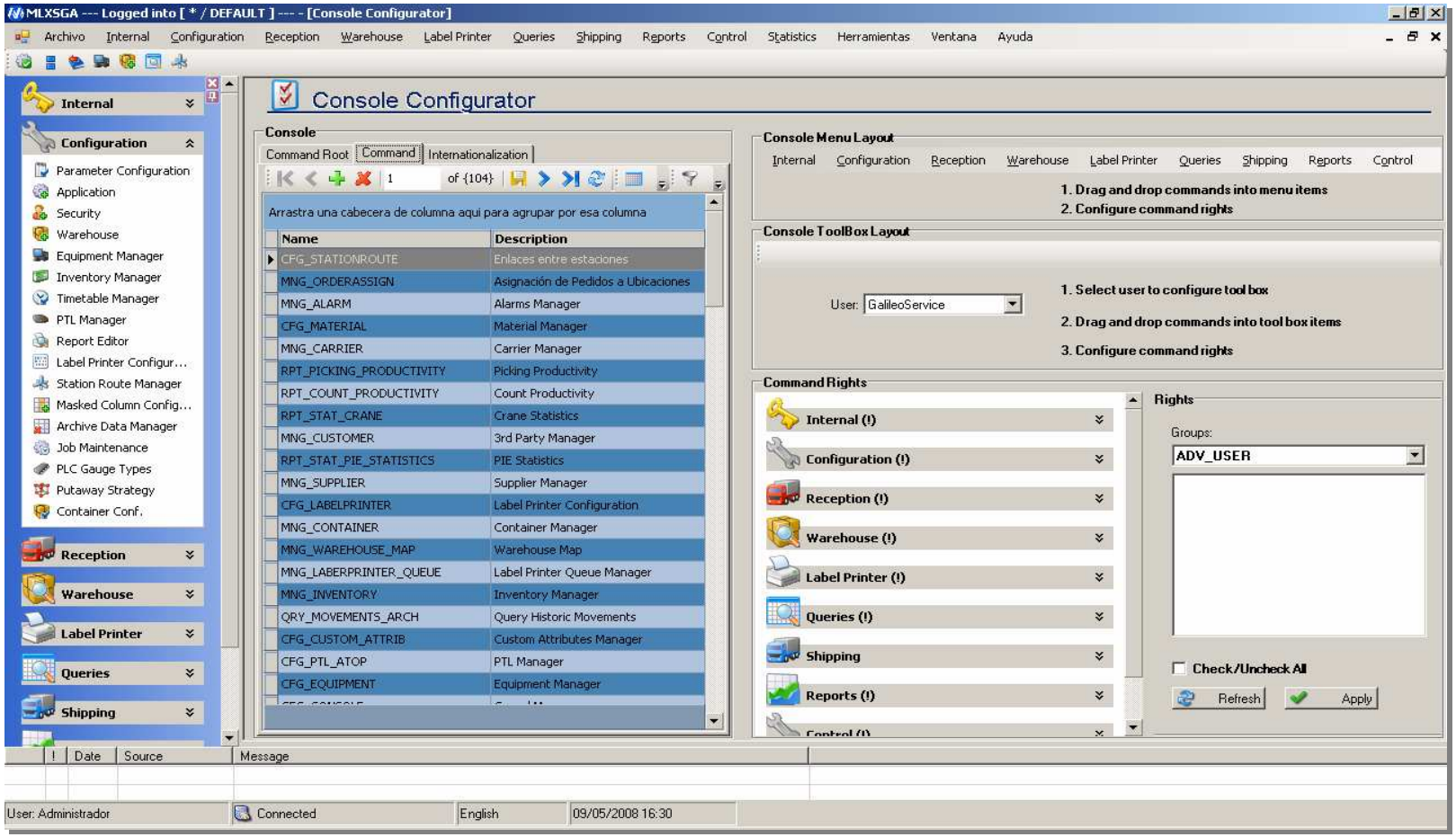
Jobs maintenance



Workflows viewer (processes)



Security manager



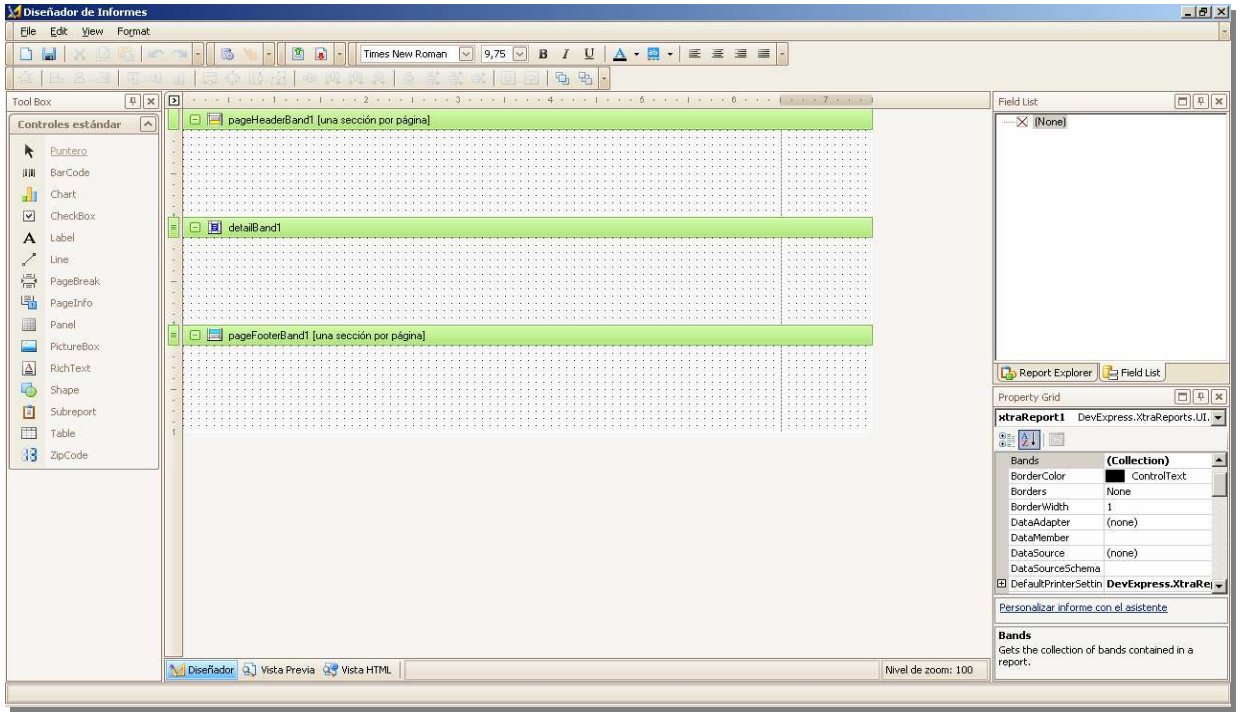
REPORTS AND STATISTICS

The system comes with the following preconfigured reports:

- System entries and exits.
- Reception discrepancies
- Warehouse activities by article.
- Warehouse activities by location.
- Warehouse activities by operator.
- List of articles ordered by code.
- List of articles ordered by description.
- Details of productivity by operator.
- Lack of stock.
- List of picking orders.
- Assigned counts.
- Locations without recounting.
- Count productivity.
- Count variation by location.
- Sessions initiated in the system.
- Incomplete tasks.
- Inventory by product code and location.
- Inventory by product description and location.
- Inventory of a location.
- Inventory of a product code.
- Stock received.
- List of locations by area.
- Comparison of working times of operators.
- Report of dispatched goods.

Report graphic designer

The system comes with a report graphic designer which allows clients to create their own reports from scratch or build on existing ones in order to obtain the information required at any time.



ADDITIONAL CHARACTERISTICS

easy wms includes more features to meet the diversity of needs of our clients around the world.

Multi-owner	Allows goods from third parties to be managed. Ideal for logistics operators.
Multi-site	A single server is installed. This is used in all the warehouses with different geographical locations.
Multi-language	The application is translated into several languages and several alphabets.
Extensible	The application is designed to include specific attributes of the client's business processes.
Based on plug-ins	Following the concept of modularity, the application is a collection of plug-ins (or functions) from which other new functions can be created.
Graphic interface	The application has a graphic, simple, comfortable, fast-and-friendly user interface which facilitates rapid learning.

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LIFECYCLE

easy wms is configured and developed according to current legislation and following the traditional lifecycle model of an information system.

Stage I	Data from each client is collected in order to configure and parameterize the system in function of the working characteristics of the client.
Stage II	Processes are configured and parameterized based on the data obtained from each client. Documents on **detailed specifications and test cases** are made.
Stage III	Hardware equipment is installed and the application in the client's warehouse is implemented. Training at an operational and technical level is carried out.
Start-up inventory	Starting point for the production start-up of the WMS system. Using the tools enabled for inventory a recount of the whole warehouse is performed in order to begin to operate using the WMS.
Stage IV	Real production of the WMS application begins. The implementers of Mecalux attend in person and deliver the WMS documents (user manuals, technical manuals…).

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ARCHITECTURE

easy wms is designed with a modern client-server architecture, in which the sever contains the business rules and the client's workstation only contains graphic functionalities to improve response speed.

For clients using PC — Windows XP SP 2 (minimum requirement)

For clients using RF — Windows CE version 5.0 or higher

Pour le serveur — Windows 2003 R2 Server and DB: Oracle 10g R2

Architecture in 3 layers

User interface (C#.NET)

Services (C#.NET)

Logic and data access (Oracle PL-SQL)

Microsoft GOLD CERTIFIED Partner

SAP

HARDWARE REQUIREMENTS

easy wms is installed in mobile devices which meet the following minimum requirements:

Operating system	Windows CE 5.0 or higher
Microprocessor	Intel X-Scale PXA270 at 624 MHz
RAM memory	64 Mb
Flash memory	64 Mb
Display capacity	QVGA [240x320 pixels] VGA [480x640] Colour/Monochrome
Communication	WLAN Radio
Other (optional)	Label scanner

HARDWARE REQUIREMENTS

easy wms can be installed on devices by the principal manufacturers on the market.

Some examples are:

	SYMBOL	Teklogix	Intermec
Light RF terminals/ cellulars			
Robust RF terminals			
Folk-lift terminals			

HARDWARE REQUIREMENTS

easy wms it is recommended to use Symbol, Intermec or Cisco with the following characteristics:

Physical interfaces	802 3 abg LAN ports
Bands	2 412 – 2 472 GHz 5 150 – 5 250 GHz 5 150 – 5 350 GHz 5 470 – 5 725 GHz (according to country specifications)

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WHY USE A WMS?

- It knows where the stock is at all times.
- It optimises the work involved in searching for locations and preparing orders.
- It performs statistics on the work in the warehouse (order reception, location, preparation times, etc.).
- Information can be obtained instantaneously on products, containers, locations and the tasks being performed by the operator.
- Tasks can be performed in other information systems.

THIS INVOLVES

- Higher efficiency in warehouse work.
- Increased control over warehouse stock.
- Increased control over warehouse staff.
- Staff can rotate around areas without problems.

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WHY USE A WMS ?

- We have more than 40 years' experience in the storage industry.
- We have a network of offices and local support.
- We have a modern technological platform which evolves on a monthly basis.
- We have a flexible platform which allows the software to be adapted to the client's needs rather than the client adapting to the restrictions of the software.
- We offer a competitive price.
- We offer a 7x24, 365-days-a-year after-sales service.
- Our software can be installed on a wide range of radiofrequency terminals of different manufacturers.
- We accompany the client from pre- to post-sale, assisting in all the stages of analysis, design, configuration, programming, training and start-up.
- Our software can be integrated with automated devices of Mecalux and also with those of other manufacturers.

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PRACTICAL CASE

AUTO EQUIP

Centres Autoequip, S.A.

PRESENTATION

Centres Autoequip, S.A. provides rapid maintenance and care services for vehicles, and is specialised in tyre distribution.

In 1988 Rafael Bosch, the current president of the company, began to sell tyres in a small shop in Premià de Mar called Neumáticos N-II. In 1992, he moved to Vilassar de Dalt, where he set up Neumáticos Vilassar.

The business continued to grow and in 1995 Autoequip was founded, the foremost Catalan chain specialised in rapid maintenance services for vehicles.

Since then, the company has carried on developing. It is now undergoing a period of expansion and growth, and has 17 outlets in Catalonia, distributed across the provinces of Barcelona and Girona.

In 2009, the company purchased a new logistics distribution warehouse for outlets in the town of Argentona. The centre is equipped with a radiofrequency management system easy MECALUX

BUSINESS

The business of Centres Autoequip is based around the following divisions:

- Rapid maintenance of vehicles.
- Sale and replacement of tyres.
- Sale and replacement of components for vehicles (brakes, shock absorbers, lights rims, cooling systems...).
- Sale and installation of car audio appliances, navigation, multimedia and hand-free devices.

More than 6,000 articles in total

The objective market of Centres Autoequip is:

- All car owners.

The keys to the success of Centres Autoequip are:

- Speed.
- Quality.
- Professionalism.
- The best price on the market.

LOGISTICS NEEDS

- High speed in order preparation.
- High and variable number of article types.
- High capacity for optimisation of space and storage.

THE WAREHOUSE

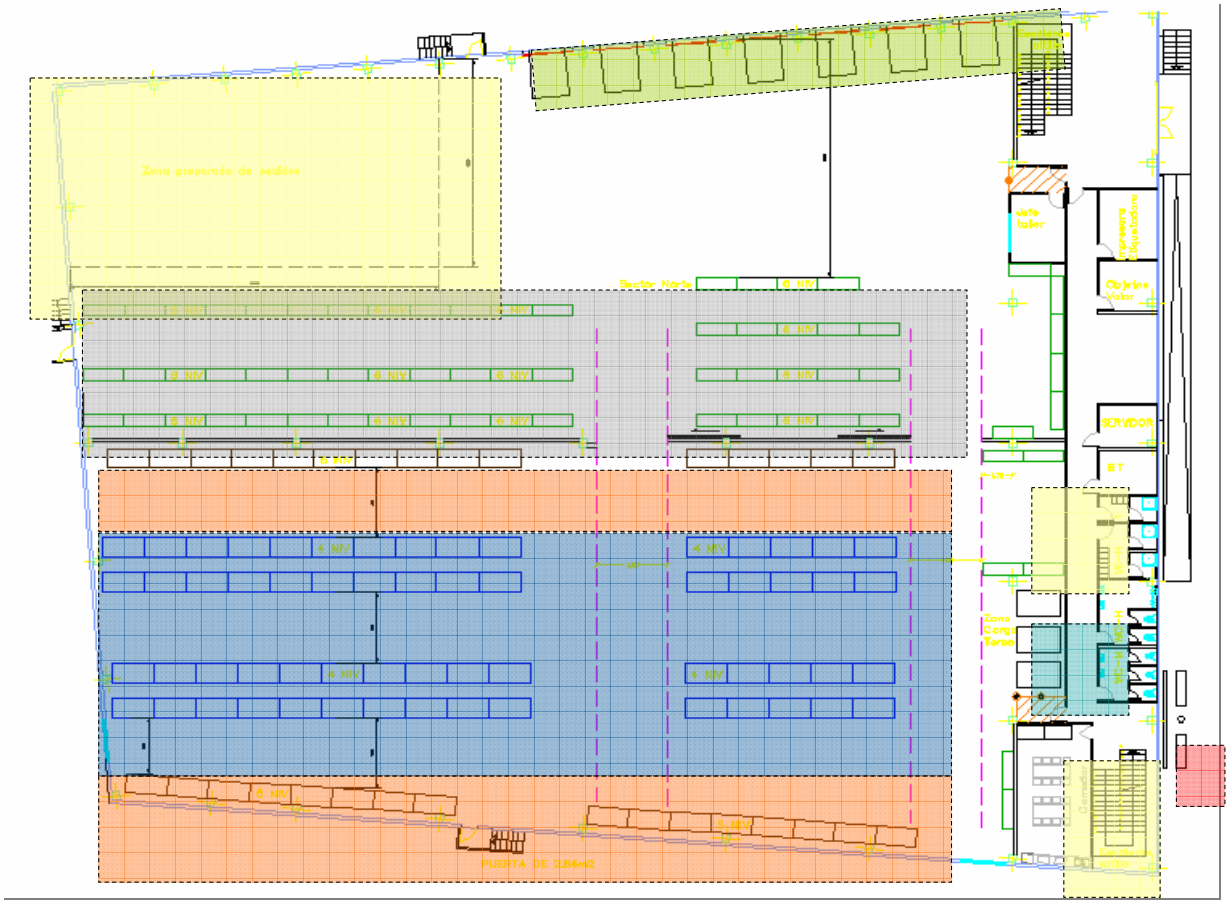
- Total surface area: 3,156 m²
- Surface area for services and offices: 448 m²
- Surface area of warehouse: 2,707 m²

- Conventional racking
- Floor storage area
- 8 Storage aisles
- 2 Reception docks
- 5 Dispatch docks

- 8 RF terminals
- 5 Fork-lift trucks
- 1 Reception/dispatch work station
- 1 Label printer

THE WAREHOUSE

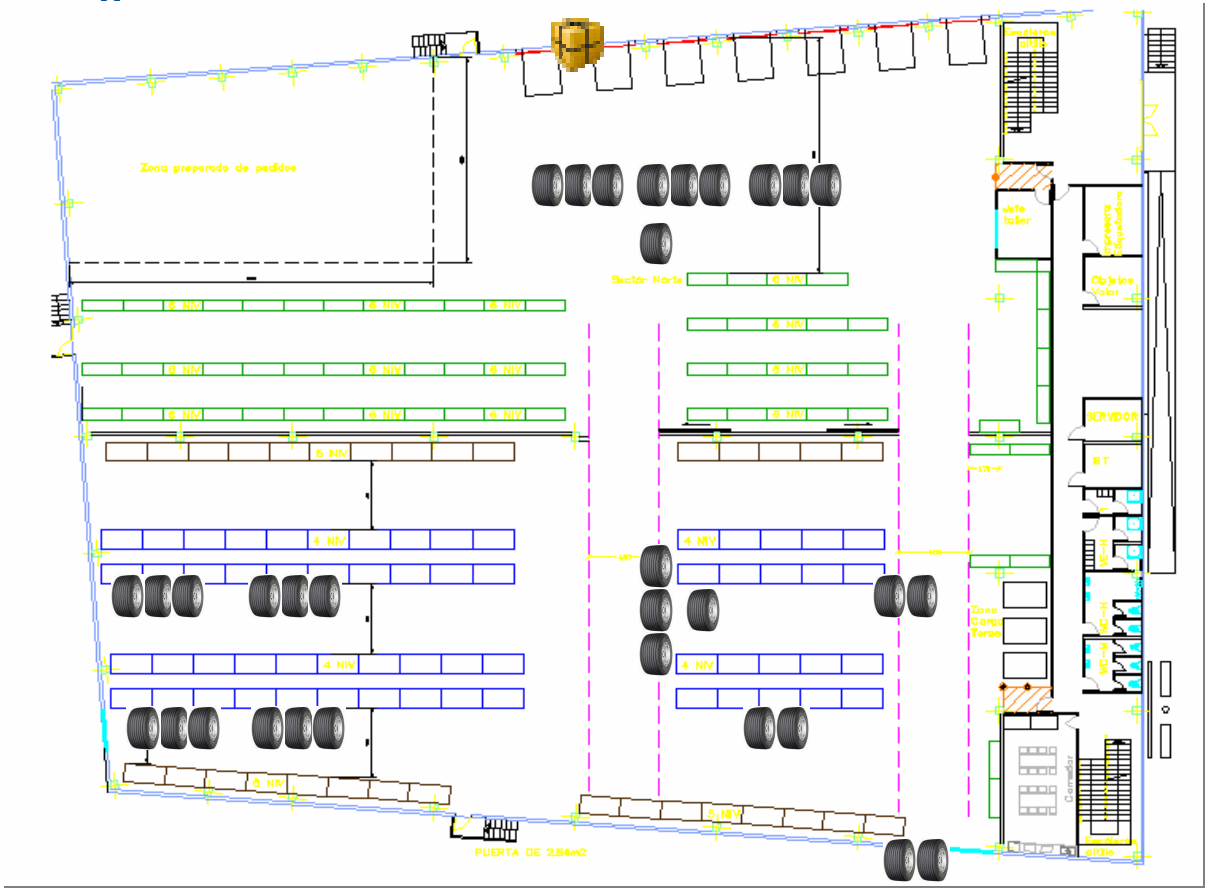
- Floor area
- Blue tyre area
- Orange tyre area
- Grey tyre area
- Shop area
- Car audio area
- Reception / dispatch dock



Reception and location:

Optimisation of space and storage

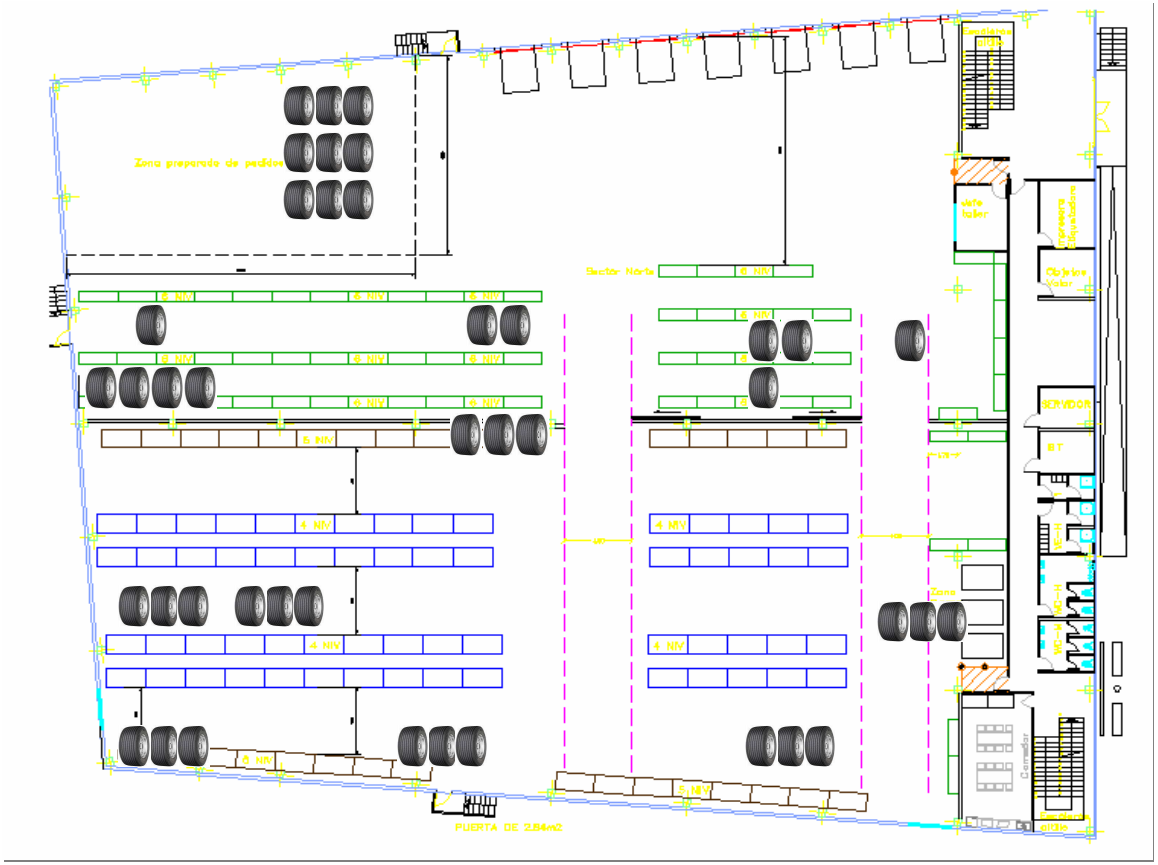
1) Vehicle unloading.
2) Consolidation of products complete containers.
3) Cross-docking management.
4) Location of complete containers.
5) Consolidation of containers for the filling of free spaces with peak input of goods.
6) Location of peaks in goods; reception in area for peak input.



Dispatch and order preparation:

High speed in order preparation

1) Management of cross-docking area; order forecast.
2) Optimisation of quantities and reduction of peaks in goods.
3) Grouping of orders in order waves.
4) Optimisation of the operator route.
5) Zoning of warehouse in article turnover areas - A, B, C.
6) Automated closure of dispatched articles.



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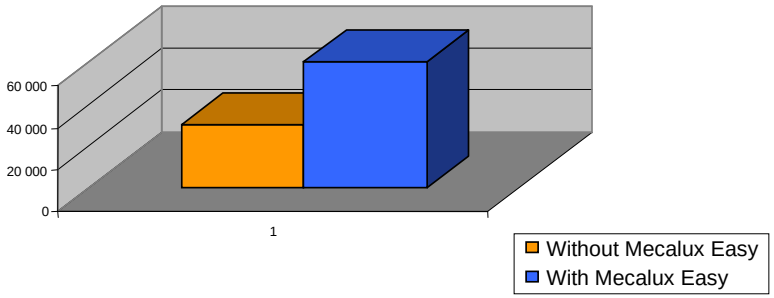
OTHER PROCESSES

- Permanent inventory and generation of task counts.
- Automated calculation of article turnover.
- Assistant for consolidation of article types in a single stored container.
- Generation of labels for container and locations.
- Block assignment of tasks to operators.
- Generation of reports and statistics.

IMPROVEMENTS ACHIEVED

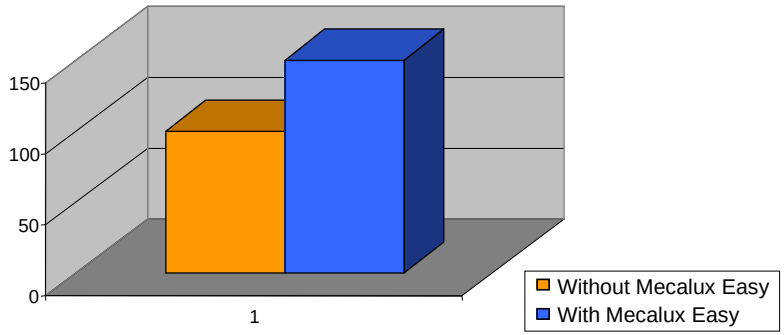
Product storage capacity

Without Mecalux Easy	30,000
With Mecalux Easy	60,000
Increase	**100%**



Capacity for goods reception

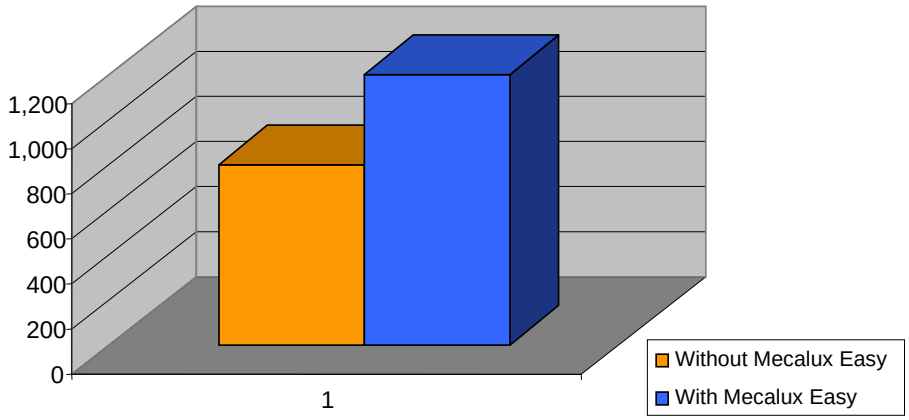
Without Mecalux Easy	100
With Mecalux Easy	150
Increase	**50%**



IMPROVEMENTS ACHIEVED

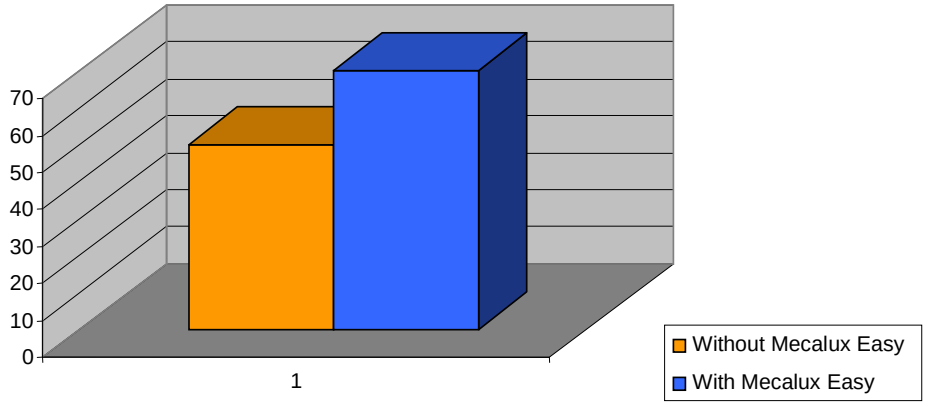
Order preparation

	Lines / day
Without Mecalux Easy	800
With Mecalux Easy	1,200
Increase	**50%**



Dispatches

	Orders / day
Without Mecalux Easy	50
With Mecalux Easy	70
Increase	**40%**



IMPROVEMENTS ACHIEVED

- Automation of movements.
- Optimisation of storage.
- Minimisation of internal warehouse movements.
- Less time spent learning for operators.
- Integration of IT systems.

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