



ICZ OSIRIS

A SYSTEM FOR A MODERN WAREHOUSE

A MODULAR SYSTEM FOR THE EFFECTIVE PLANNING, MANAGEMENT, MONITORING AND EVALUATION OF VARIOUS WAREHOUSE OPERATIONS. ITS DEPLOYMENT CAN SIGNIFICANTLY INCREASE WAREHOUSE PERSONNEL PRODUCTIVITY WITH A CONCURRENT REDUCTION IN ERROR RATES; IT IS POSSIBLE TO ACCELERATE GOODS TURNOVER, TO USE THE STORAGE SPACE MORE EFFECTIVELY, TO REDUCE LOSSES CAUSED BY WRONG OR DELAYED SUPPLIES, AND TO PROVIDE UP-TO-DATE AND TRUSTWORTHY INFORMATION ABOUT STOCK STATES AND MOVEMENTS WITH THE REQUIRED LEVEL OF TRACEABILITY.

[A TOOL FOR MANAGED STORAGE]

WMS OSIRIS is a typical Warehouse Management System (WMS), enabling implementation of the principles of managed storage in all types of warehouse operations. The basic system functions facilitate the planning and management of storage processes during reception, storing, release and picking, completion, dispatch preparation and loading checks, warehouse reorganization and physical inventory checks. The system is active in most of the processes (it plans, decides and evaluates), while the warehouse personnel just carry out its orders and record the results. The basic means of communication between the system and the warehouse personnel is a portable terminal with a bar code or RFID reader.

Voice (pick-by-voice) or light (pick-by-light) can also be used for communication. Another means of communication is a common PC. The use of hard copy receipts is limited to cases when the electronic form is not available or is less suitable in the context of the respective process.

[MODULAR AND SCALABLE SOLUTION]

The WMS OSIRIS system is designed to take into consideration the specifics of various types of logistic chains, as well as the continuously changing operational conditions (the range of stored goods, the structure of the warehouses and their technical equipment, the handling methods, etc.). All common types of warehouses are supported (for example purchasing, inter-operational, dispatching, and customs warehouses) as well as various strategies for storing, releasing and picking, which can be customized to the warehouse and handling technologies used and the specific conditions of the warehouse operation. The number of warehouses that can be recorded and managed within the system is not limited. The type of each warehouse, its structure (sections, zones, storage locations) and the operation methods of its sections (including optimal manipulation routes) can be customized by the user with regard to their current requirements. Thanks to the open nature of the system and the use of object methods in its design and implementation, the basic system functions can be mutually combined with its additional functions. Thus, the required operational parameters can be achieved.

[EASY INTEGRATION WITH SURROUNDING SYSTEMS]

A universal interface based on EDI/XML as well as specific interfaces are available for bi-directional data exchange with other systems (warehouse operator, supplier, customer, shipper) are ready for specific types of corporate information systems (ERP). A bi-directional data interface also provides the interconnection of ICZ OSIRIS with the material flow management systems (MFS) responsible

FEATURES AND BENEFITS

- ▶ Improvement of the organization and management of warehouse processes and limitation of the influence of the human factor on them
- ▶ Decrease in hard copy receipts
- ▶ Increase in capacity and productivity of the warehouse operation
- ▶ Decrease in error rates during work at the warehouse
- ▶ Increase in the quality of dispatching (accuracy, completeness and timeliness of the supplies)
- ▶ Full goods flow management and its easy and fast traceability
- ▶ Creation of an accurate and trustworthy source of data about inventory states and movements
- ▶ Supports automated identification (bar code, RFID) and portable devices
- ▶ Possibility to use fully automated warehouse systems (pallet and crate stackers, paternosters, vertical systems, etc.)
- ▶ Support of modern picking technologies (pick-by-voice, pick-by-light)
- ▶ Standard data interfaces (EDI, XML) for integration with other information systems
- ▶ Years of experience in implementing and operating the system

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for the optimal coordination and direct management of automated warehouse and manipulation equipment. The necessary links between the warehouse and the manufacturing operations can be secured using data interfaces with the manufacturing execution systems (MES), and the pull principles of material flow management can be supported. Support for electronic Kanban and direct registration of products sent to the warehouse are also included in the system.

[PROCESS VARIABILITY AND ACTIVITY OPTIMISATION]

Planning, management and implementation of individual warehouse processes and component activities can be set in such a way that, besides the type of the warehouse operation and its role in the logistics chain, the features of the individual articles and the requirements of the customer are taken into consideration as well. Furthermore, it is possible to complete the basic warehouse processes with activities related to, for example, quality management or the implementation of other services provided by the warehouse operation (such as labelling, completing, and creating customer or dispatch packaging). To ensure the maximum use of the warehouse capacity and to optimise the activities, there are tools available in the system that define various strategies for receipt into or release from storage, as well as potential manipulation routes between individual areas of the warehouse, which can also be used for planning and assigning work to the warehouse personnel.

[BAR CODE AND RFID]

It is possible to use bar codes and RFID to identify goods, warehouse and handling units, warehouse locations and operational documents, as well as to obtain data during all warehouse processes. Both 1D and 2D encoding and the related standards (GS1, ODETTE) can be used during label processing and creation. The use of bar codes and RFID leads to significant elimination of errors made by personnel in data acquisition during warehouse transactions, and allows for the unambiguous identification of the object/content of each warehouse transaction (manipulation quantum).

[AUTOMATION]

In a number of warehouse operations, it is appropriate to use automated warehouse and handling technologies. Thanks to ICZ OSIRIS, it is possible to integrate into the warehouse processes both independent, automatically managed devices (system trucks, paternosters or lift systems) and fully automated storage, handling and order picking technological systems, for instance, based on stackers.

[WAREHOUSE MANAGEMENT]

The analytical functions of the WMS OSIRIS system and the data obtained continuously during activities enable effective planning, monitoring and evaluation of processes and assessment of the fulfilment of key performance parameters of the warehouse operation (such as quality, completeness and timeliness of customer order fulfilment, goods turnover, and effective use of resources). Warehouse transactions can be monitored and evaluated with regard to many aspects; thus, information about warehouse personnel performance, the level of use of manipulation equipment, or the extent of services provided to internal or external customers can be obtained.

Continuous monitoring of order fulfilment states enables timely recognition of potential problems and adoption of appropriate measures so that the required deadlines of both internal and external supplies are met.

[OVERVIEW OF FUNCTIONS]

Receipt of Goods

Receipt of goods is allowed based on a receipt system; these can be prepared using data from the advance shipping notice (ASN) for the goods taken from the superior system. The information registered at receipt (batch, expiration, colour, size, serial number, etc.) and its validation method can be set in the ordinary data of the particular articles or their groups. The information can be read from external labels or from internal sources, and labels can be prepared in such a way that the data entered using a terminal keyboard is limited to the minimum. It is possible to receive goods linked to a particular production order or sale order.

In the case of claims and returned goods, it is possible to use information from the original storage release receipts and thus to retain information about origin necessary for traceability. The availability of the received items can be set with regard to the type of entry, the storage period, the date of expiration or the result of the input quality check.

Input Check

The performance of an input check can be linked to article (group) characteristics or to the quality of suppliers, which can be assessed continuously in the system (percentage of discrepancies discovered). It is possible to check items during receipt as part of a separate subsequent operation. The received and entered articles checked through sampling may be released gradually depending on the results of the check linked to the respective parts of the supplies (batches, pallets, pieces).

Entry into Storage

The received items are transferred to their storage locations based on automatically created storage entry orders. The target location is set by the ICZ OSIRIS system based on an adjustable storage entry strategy, which takes into consideration both the logistics parameters of the entered article (including its real or planned turnover) and the logical and physical parameters of the warehouse, including its current available capacity. Entries into vacant locations, into partially full locations with the same articles, into partially full locations with different articles and more may be combined to achieve optimal warehouse capacity use.

If the transport route between the starting and final destinations includes several sections, more means of manipulation and their operators are included into the storage entry process. Storage entry orders released for implementation are displayed on portable terminals or transmitted to the control systems of automated trucks, stackers or other similar equipment. Bar codes and RFID tags are used to check the correctness of order implementation; they are placed on the storage entry handling units and/or warehouse locations.

Planning and Preparation of Release from Storage

Requests for release, usually obtained from the superior system, are displayed on the workstation of the operator who plans

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and manages the process of release from storage, and who is aware of its current course (performed, unfinished and not initiated requests) and the availability of the required materials. Requests may be released for preparation one by one or in a batch (referred to as a dispatch batch).

The further course of the process is mainly influenced by the method of restocking in the order picking zone (cyclical or continuous) and the organization of the picking process and dispatch preparation. If inventory is restocked in the order picking zone before the start of the order picking cycle, ICZ OSIRIS checks (for all the requests for release from storage related to the selected implementation) the current state of the stock available for order picking; if there are not enough items in stock, it automatically creates requests for their restocking. In the continuous mode, requests for restocking are created at the moment set minimum level is reached.

In the next stage of preparation for release, the relevant stock is allocated automatically depending on the employed strategy (FIFO, FEFO, LIFO), the parameters of the released article and other limiting information contained in the release request (number of days until expiration, batch number, serial number of the order, etc.). The outcome of the allocation is a group of orders for release and order picking passed to the relevant warehouse personnel for implementation.

Release from Storage and Order Picking

Whole storage units (pallets, boxes) are released from storage directly from the relevant warehouse locations and transported to the dispatch space on the basis of release orders given to the warehouse personnel. The release orders are processed in the same way as the entry orders. The method of partial offtakes from the order picking locations (picking) depends on the number, design, and arrangement of the order picking zones as well as on the organization of work of the warehouse personnel.

Orders may be picked in sequences or in parallel; the warehouse personnel can work in the man-to-goods or goods-to-man mode; offtakes from individual locations may be accumulated and completed into orders either during the order picking or during the following completion phase. During order picking, the information necessary for traceability (batch, serial number, etc.) may also be registered and checked if needed. The sequence in which the release orders are assigned to individual warehouse personnel respects the requirements for the quality of the dispatch unit (the sequence and the method of assembling the individual layers), and the optimization of the order picking route.

Portable and voice terminals can be combined with visual signs at the offtake location or at the place of completion (pick-by-light, pick-to-light).

Final Check

In addition to routine checks of the correctness of the implementation of release orders during the process (offtake location, code of the article, batch, quantity), another check may be included in the release process – either independently or as a part of the order completion and packaging. If any discrepancies occur, the relevant release receipt item is modified and the system creates a new urgent request for picking the missing quantity in such a way that the order is not reduced.

Completing and Packaging

In warehouses with a large portion of diverse orders of small volumes, it is important to balance the performance of the individual stages of the dispatch process, i.e. order picking, completion and creation of dispatch packaging. In such a case, parallel order picking - which increases the productivity of the order picking phase - requires the subsequent merging of the items picked by various warehouse personnel into a single dispatch batch. ICZ OSIRIS supports the activities of warehouse personnel at the place of completion or on the line through portable terminals; it continuously registers the content of the created manipulation units.

If units created during the order picking or completion process cannot be used for the dispatch, their content is transferred into the relevant transportation/packaging units equipped with labels and other accompanying documents according to the requirements of customers and individual shippers. WMS OSIRIS is able to register the type and content of the dispatch units and transmit the relevant data to the shippers in electronic form.

Expedition

ICZ OSIRIS facilitates 100% checks of dispatch correctness by reading the transportation labels of the particular dispatch packaging when they are loaded into the vehicle. If the prepared dispatch packaging exceeds the capacity of the vehicle, it is possible to modify the content of the load by eliminating a delivery or its part. ICZ OSIRIS can also be deployed to keep a record of the actual times and dates of deliveries: the required data are entered into the system manually from the confirmed delivery notes or adopted in electronic form from the transport planning and management system (TMS).

Inventory Check

Differences between the physical and recorded state of stock can be solved through continuous checks of the state of staffed locations, through partial inventory checks by location or article, and through complete inventory checks. Any lack or surplus found during the inventory check is compared to the actual state.

Matching differences are solved by physical relocation of the goods or by a change in the storage record; while other differences are eliminated by inventory correction through a loss or a discovery (an entry or release receipt with the relevant type of movement).

Reorganization

Intra-warehouse transfers are intended for reorganizations of warehouses for operational or technological reasons (such as a change in the turnover of articles found through an ABC analysis); they are performed on the basis of re-storage receipts, which can be created by the workstation or in the warehouse operation via a portable terminal. The relocation orders are performed and confirmed in a similar way to the storage entry or storage release orders.

Current State and History

WMS OSIRIS keeps a record of the current state and history of the implemented storage transactions with the details of handling quanta determined by their unambiguous numbers and current locations. The content of each manipulation quantum comprises as much information (dimensions) as necessary to distinguish inventory states at the required level and with the required details (article, quantity, batch, date of expiration, serial number, order, owner, entry and release receipts, certificate of quality, etc.).

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All the implemented storage transactions are marked with a time stamp and the name of the user who made it. It is possible to work in a single warehouse with articles with several owners without the necessity to physically separate the warehouse locations and other spaces.

Various levels of availability of goods for individual types of storage transactions are ensured in the ICZ OSIRIS system by assigning so-called status (for instance, available, in quality control, subject to complaint, returned, and with lapsed expiration period), which the user can assign to the particular types of entry and release receipts. The transitions between the statuses may be performed automatically (e.g. by blocking goods with lapsed expiration periods or with a date of expiration that will lapse within a set number of days) or manually. Changes in stock status can be passed to the superior system.

Added Value Services

This part of the system is intended for warehouse operations that ensure other activities (besides storage), such as labelling and re-packaging of goods, or creating sets. The release receipts for articles, which are required for a creation of sets, are generated automatically based on the defined set-ups. The scope of the implemented services is recorded based on data calculated automatically or entered via a portable terminal or workstation.

Records of Returnable Packaging

The WMS OSIRIS system can keep records of the state and movement of the packaging accounts of individual suppliers and customers. Operations involving the packaging accounts may be carried out within the scope of goods entry or release operations (with pre-set information) or entered individually. The current states and movements of packaging accounts can be viewed in an interactive form and printed.

Cross-dock

A system supporting both single-level and double-level cross-docking is available for distribution and logistics companies. In the first case, the transport units delivered to the transshipping point are only registered as part of a consignment included in one of the existing shipments and moved to the dispatching locations assigned to the shipment.

In the second case, the content of the transport units is registered and further divided into dispatch units according to the orders from particular customers.

The activity of the transshipping point is managed in real time via portable terminals; while potential problems (such as not meeting the scheduled times or exceeding the planned transport capacity) are announced in advance. Information about expected deliveries, customer orders, shipping and planned transports are taken from the cooperating information systems (ERP, TMS), while data about the actual course of processing are sent back.

Logistics Controlling

The ICZ OSIRIS system keeps a record of all information necessary for monitoring and evaluation of warehouse activities. The company management can monitor the productivity of individual warehouse personnel continuously, as well as the extent of the services provided to both external and internal customers, and the key performance indicators (KPIs) of the individual processes and the warehouse operation as a whole.

Billing

In the case of logistics (storage) warehouses, the type of monitored performances can be set and assessed individually for each owner of the goods, and to generate the sources for service invoicing automatically. The same functionality can be used for internal purposes.

Reporting

The in-built reporting tools of the system facilitate creation of user variants of basic reports (values of selected conditions, data content, and sorting of individual records). Data can be exported into files prepared in advance (templates), and they can be further processed using Excel. Standard reports include inquiries about stock states and movements and about packaging accounts, the states and processing of the individual receipts, stock turnover, the performance of the warehouse personnel, etc. Above-standard reports can be created upon request or using an external reporting tool.

Data Interfaces

Thanks to its bi-directional data interfaces, ICZ OSIRIS can be interconnected with superior and cooperating systems (ERP, MES, TMS), as well as with management systems of automated warehouses and manipulation equipment. Data about expected entries and scheduled removals (including the related ordinary data) and about stock status changes (blocking, releasing) are taken from the superior system (ERP); information about implemented entries and removals and about performed status changes are returned. Via this interface, it is also possible to hand over the required data between two installations of the ICZ OSIRIS system in various independently managed locations.

Transport requests are submitted to the transport scheduling and management (TMS) system, and data about their incorporation into the plan are received. The sent and received data are in the form of XML files, text files, or database tables; they are transferred through a database system, the shared part of a file system, or in another suitable way (an FTP server).

Furthermore, integration tools based on the web service (WS) technology or on remote function calls are also supported. Requests for individual operations are sent to the management systems of the automated warehouse and manipulation devices, while the results of their implementation are sent back.

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