Klinkhammer *GROUP*

warehouse, production and storage logistics

The New Software Generation For Your Warehouse
KlinkWARE® – Warehouse-Management-System

✓ 5x faster
✓ Excellence in Touch
✓ As user-friendly as never before

KlinkWARE® – The New Generation of Warehouse-Management-Software of the Klinkhammer Group

Easier, more flexible, faster

There are many software solutions on the market – but only few ones like KlinkWARE® the new generation of the Warehouse-Management-System DC21 of the Klinkhammer Group. It is based on cutting-edge, trendsetting technology and perfectly tailored to the requirements of intralogistics – the ideal basis for simplified processes and high cost-efficiency in modern warehouse management.

Future-proof – long-term tried and tested

For more than 40 years the Klinkhammer Group has been one of the leading suppliers of turnkey intralogistics systems. The logistics software DC21 has been successfully and reliably in use in more than 100 systems, for more than 15 years. Continuously further developed, extended and adapted it represents the trendsetting solution in the field of warehouse management and material flow control for big corporations and small companies in the branches of trade, production, food or in the automotive industry.

Reliable procedures – optimum advice

As far-sighted partner with many years of experience the specialists of the Klinkhammer Group help you choose the necessary systems and modules. The profound understanding of the targets and business processes is the basis for both an advanced and extensible and also economic software solution.

Continuously checked – web-based system

The annual validation by the Fraunhofer Institute for Material Flow and Logistics emphasizes the performance and quality of the existing DC21 software. KlinkWARE® has been developed based on the experience gathered with DC21 over many years. For administration, evaluations and reports a web-based system is used.

> »Those who want to get things moving need the courage to make some changes. «

Frank Bennemann, Software development

Highlights of the new KlinkWARE®-Generation

RFID

Multi Order Picking

control station

Tolerant FiFo

Production batch tracing

EAN

Formation of bills of material and sets

Permanent inventory Support

Multi-client capable

Pick-by-Voice

Multilingualism

Best-before date

Radio Data Transmission

Labels

KlinkWARE® – Our Experience for Your Success

Faster processes, easy touch operation

Speed – up to 5 times faster

Thanks to the state-of-the-art technology and software architecture the processing speed of the control jobs in form of PLC-telegrams is up to five times faster than in the system existing so far. In tests with 4 PLC-controllers around 50 telegrams per second and PLC could be received and replied just as quickly. This corresponds to a throughput of 400 telegrams received and sent per second. Thanks to the in-memory database technology being used for quickly processing statistical analyses, data exchange and archive functions an object-oriented database is used in addition to a conventional, relational database. This guarantees a high system performance.

Excellence in Touch – more mobile

KlinkWARE® is a pioneer in the field of lean touch screen operation of panels, tablets and forklift truck terminals. The slide function avoids laborious and extensive scrolling. By quickly brushing the surface with the fingertip it is possible to easily navigate through lists, by tapping the relevant functions zoom in and using the one-page function overall view or partial views appear with one single touch. The lean and easy to use software thus considerably facilitates the handling for the user and saves time.

Highest user comfort – more intuitive

Thanks to the user-friendly design the user is able to work with KlinkWARE® already after a short introduction. The graphical user interfaces are self-explanatory. The touch screen capability and the compatibility to Windows 7, 8 and future operating systems make KlinkWARE® one of the most up-to-date software solutions on the market.

Simple interfaces – more compatible

As modern, modularly structured software KlinkWARE® offers interfaces to all ERP-systems. It integrates into already existing system landscapes and offers a link to shipping and special systems by means of the WRX-adapter for interfaces. Klinkhammer takes over the complete IT logistics control and provides support for complex migration and connection processes.

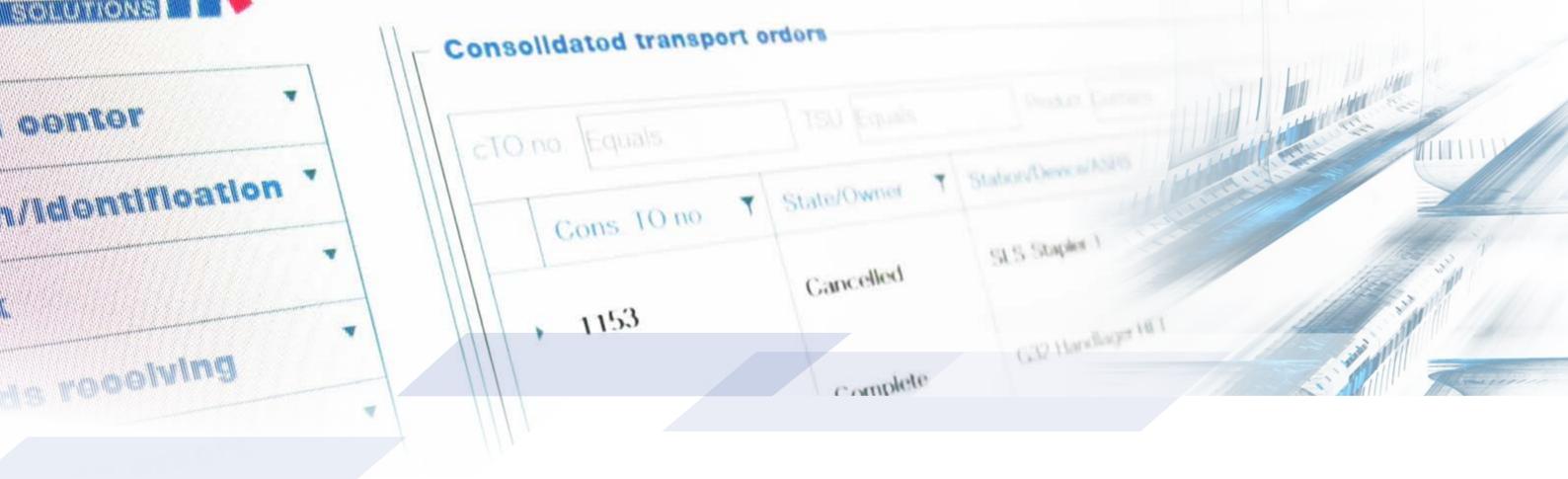**Flexible software platform – individually adaptable**

After a short introduction and familiarization with the software you are able to select yourself the warehousing strategies regardless whether it is about FiFo, ABC-classification, height- and weight classes, order release rules, order picking sequences or the supply to the packing stations. The software has been designed such that it features a maximum of flexibility to adapt to customer-specific processes. With professionality during the project realization phase and a perfected competence in applying methods the Klinkhammer experts offer assistance in all questions concerning software operation.

Comprehensive Service24 – faster and more reliable

Already in the introduction phase we prepare your staff members how to use their new systems, train them prior to commissioning and accompany them when going live. Experienced IT-specialists and technicians of our Service24 team are available for you 24 hours a day, seven days a week and provide fast and reliable support. A safe remote access ensures that we can intervene quickly without affecting the operation of your plant or system.

In case of changes in your warehouse – easier to expand

Process-based modules guarantee flexibility, transparency and individual expandability. Thus, it is possible to program special functions or access existing modules which have not been used yet in your application. A modern architecture on the latest technology platform allows short implementation times and easy adaptation to changes in your warehouse.

Consolidated transport orders

Use Proven Technology – Add Innovative Features

KlinkWARE® offers exactly those features you really need

Better control – increased transparency

Short delivery times, high adherence to schedules, low error rates and optimum use of resources - with KlinkWARE® you can perfectly achieve these goals. Whether highly complex automated logistics systems or conventional manual warehouse area - KlinkWARE® utilizes all potentials of the warehouse optimally and guarantees cost-efficient processes. This is made possible by the intelligent software architecture with process-based modules which are continuously developed further based on the daily logistics practice and the experience gathered over more than 15 years.

Process-Based Software Modules

- Receipt of Goods
- Stock Formation
- Ambient- and Storage Conditions
- Master Data
- Cross-Docking
- Service
- Storage
- Handheld Radio Transmission
- Stock Formation
- Storage
- Kommissionierung
- Delivery Order Management
- Inventory
- Shipping
- Quality Assurance
- Packaging
- Data Archiving
- Material Flow
- Consolidation
- Interfaces
- Forklift Terminals
- Pick-By-Light
- Paper-Based Processing
- Web Application
- Control Station and Statistics
- Pick-By-Voice
- Work Station Dialogs

KlinkWARE® – Master Data

So that your ERP can set the direction.
A designation or name is more expressive than a number.

Articles

The article master, also called stock list, consists of many aspects a material or product requires when storing or handling it.

Bills of materials

Here, not only the components required can be specified, but also work steps including costs, allowed times or descriptive documents.

Customers / suppliers

Customer and supplier master data are maintained and updated jointly. The so-called account plays a privileged role. Thus, also freight forwarders among others have an account allowing them to analyse the supplier relationship.

Addresses

There are not just shipping addresses or invoice addresses, but also sender addresses on behalf of your customer.

Trust in Proven Quality
Since 2001 Validated Annually
Made in Germany

Ambient- and Storage Conditions

Here, you do not just define temperature or humidity, but the environment into which the warehouse integrates including the management of product characteristics.

Multi-warehouse management

Link several sites to one logistics network that exchanges information and goods.

Stock management

Lay the foundation for related data structures and manage the properties of your products in a comprehensible and traceable manner.

Multi-client management

Your logistics department is a service provider. Clients are used to register the ownership of the products. Likewise, customers and suppliers as well as their addresses are linked to clients.

Batch management

A batch number may not only be used for backtracking, but also for optimizing FIFO-strategies.

Use-by date management

As to the shelf or storage life, further dependencies are added such as a changed FIFO, modified allocation procedures or automated status changes due to deadline(s) exceeded.

Serial number management

Serial numbers identify an individual piece or unit. Same as with the batch management, the serial number management allows tracing products.

QA status management

If it is necessary to lock goods held in stock, to put them into inspection status or move them to quarantine, then QA-states must be managed and modified.

Special conditions

Any further functionality you may require can be mapped within the scope of new modules to be programmed.

Receipt of Goods

Register your goods already at the gate right after unloading. Complaints can be documented promptly. Your sales department is given information about the immediate availability of the goods.

Manual

At a work station or RF terminal, the user is provided with information on notifications or orders and collects further information to complete the process.

Automated

An automated receipt of goods can be realized using scanners mounted to the conveyors or using RF-terminals. This requires information that come from the labelling of the respective goods in the form of bar codes (e.g. GS1) or RFID tags.

Cross Docking

If needed and desired by the recipients, you can split off, redirect or forward on quantities.

For backorders

In the backorder management orders not covered can be supplied promptly.

For specific orders

If the order already exists, it is delivered; if not, the goods are picked "as if" and put into a consolidation zone.

For replenishment

The order picking zone of an article can be replenished right from the goods receiving area to reduce mileage and handling.

Stock Formation

Based on continuous transparency and the control of stock and orders you create storage units meeting the actual needs.

Entire trading unit, manual

Registering additions is done manually e.g. at a work station or using a RF terminal.

Entire trading unit, automated

By means of appropriate labelling (EAN, GS1) of the trading units this process can be also handled automatically using terminals or conveyors.

Repacking process

From a pallet, you can create several containers, split off, identify and count order or replenishment quantities and register product properties.

Incoming goods inspection

This module allows complementing the previous modules by adding control activities and an in-depth inspection. Depending on the QA-module e.g. taking random samples is triggered.

Storage

Place your fast movers so efficiently that they reach the shipping zone on the shortest route when being retrieved.

Goods-to-Man

The dynamics of the storage and retrieval cranes and shuttles, their capacity and availability influence searching a storage location in the same way as the article distribution for bypassing a malfunction and the positioning based on the turnover rate.

Addition to existing stock

Same batch, same FIFO date, same properties – nothing is more inviting to save storage space and merge stocks.

Man-to-Goods

Route optimization is possible with several trading units to be stored in combination with a retrieval operation: Employees are never empty-handed.

Trays & Co.

This is a sort of addition to an existing stock: Sub-trading units are created which are managed by means of a load handling attachment. A dissection or space management is possible.

Relocation

Pave the way with multiple-deep storage. Bring your articles to the optimal position which was not available at the time of storage.

Goods-to-Man

In a "Goods-To-Man" system relocations are initiated automatically. This includes the assignment of a storage location that takes account of transport routes and blockades through other transports.

Centrally organized relocation

This module provides the central acquisition of relocation orders by means of which you can instruct users and devices to execute respective goods movements. Using this acquisition tool you determine source and destination of the movements.

Man-to-Goods

In manually operated areas this module allows the selection of storage units that shall be relocated. The relocation is initiated and executed by the user.

Warehouse reorganization

You will be offered proposals for how to improve the warehouse occupancy. This applies to the occupancy of storage locations with low-priority load carrier types, height classes, storage zones (alternative zones) or inappropriate ABC-zones.

Replenishment Control

Provide your storage zones with sufficient stock at any time such that this stock is available for your orders.

Demand-oriented replenishment

In case an order is received and released for which there is not sufficient stock in the requested area, a replenishment order is initiated dynamically. Without demand no replenishment is necessary.

Statistical replenishment

Based on minimum quantities defined or a minimum number of storage units the system detects a material shortage and a replenishment transaction is triggered.

Refill waves

This module complements the demand-oriented replenishment for refilling the order picking zones at regular intervals. The waves reduce ad-hoc measures.

Quality Assurance

Yourself, your production shop and all your customers expect highest quality of products and services. From the simple check or inspection to quarantines all the way through to releases via test certificates.

QA status management

QA-states influence the usability of goods for orders or replenishment processes. Blocked products shall not be sent out to customers, but be returned to suppliers. Order picking is done in both cases.

Inspection

An inspection order is a visual inspection where the goods are made available at an inspection work station. It is possible to define different types of inspections.

Sampling

Already during goods receipt random samples can be taken such that no time is lost to perform the incoming goods inspection in the laboratory. In the meantime, the remaining goods can be stored and blocked with the status „under examination".

Return shipment

Goods that cannot be used, whether in the quarantine store or in other zones, can be returned to the supplier by means of a shipping order. Your ERP will receive the corresponding information for commercial processing.

QA status change

Status changes are made based on different, selectable criteria. This allows you to either block an entire batch or to release a complete use-by date. The statuses can be expanded, i.e. there is not only the possibility to save the status "free" or "blocked".

Checking

For the purpose of checking, sub-quantities can be withdrawn or complete trading units can be made available. The selection of the trading unit can be defined manually or you can let the system do this based on specifications such as e.g. a batch number.

Quarantine store

If it is necessary to separate goods and keep them together a quarantine store is appropriate and useful. Following a check a decision on the further use can be made.

Scrapping / disposal

As is the case with return shipments, also goods not in order can be shipped for disposal. Your "scrap yard", too, can be the target of an order just like the simple stock correction.

Delivery Order Management

The order management offers you complete control over all processes which are order and stock related, from order release, progress and quantity update all the way through to dispatch of goods – whether complete or partial deliveries.

Order release filter

Certain order types, shipment types, customer groups, destination countries, orders that exceed or fall below certain volumes, weights or a number of items or that contain certain articles or require special processing may be treated differently.

Shipment generation

For optimizing shipment and packaging costs, it is possible to consolidate single orders to shipments. The generation of routes is possible as well provided that criteria exist for this.

Activation

The activation strategy defines if and when an order is really processed. The availability of work stations and capacities as well as meeting deadlines and priorities (e.g. express orders) or sequences are decisive here.

Backorder management

The backorder management module is necessary, when the ERP-System or inventory management system transmits orders to KlinkWARE® without checking the availability of the goods.

Allocation

Upon request, strategies are applied which do not only take into account the FIFO principle, but which also consider aspects like quantity optimization, low number of accesses, the avoidance of opening a pack or the equal utilization of resources.

Order Picking

Take advantage of various methods to run your warehouse efficiently. Which kind of device you use, whether automated storage/retrieval cranes, forklifts, RF-terminals, light or voice – that's of no importance.

K-point

The modules "Activation" and "Allocation" provide the K-point with orders which then are further processed and made available to the users or the conveyor system. The K-point represents the central starting point for an order in an order picking area.

Goods-to-Man

The control of stock picking in Goods-To-Man systems is strongly geared to the degree of utilization and availability of devices and work stations in the conveyor system.

Man-to-Goods

In Man-to-Goods systems the user has a great influence. He may work in an order-specific manner or create batches without having great aids at his disposal. This module supports the flexibility of human beings in a working area.

Pick-by-light, pick-by-voice, pick-by-vision, handheld RF

Using voice-over-IP devices, smart glasses or a handheld RF terminal the user can be guided through order picking by visual signals.

Value- Added Services

Integrate value-added services or special processing operations. The standard service takes place at service stations between order picking and packaging. But also complex processes are possible – up to the production of articles based on bills of material.

Simple-Service, manual

A manual "simple service" in KlinkWARE® is the display of certain jobs or activities at the service station where the user only needs to confirm the fulfilment of these tasks or jobs.

Service during the order picking process

In case a service shall take place during order picking, no service work station is required e.g. for labelling goods using a mobile printer.

Production-Service

This module represents among other things the formation of sets or the display rack construction. If an order includes sales-type bills of materials that must be linked physically to a product, this happens in the "production service" module. This module enables providing more information up to work

steps that ensure a high quality of the result on the one hand and allow logging the process on the other hand.

Simple-Service, automated

An automated procedure e.g. may be labelling with an applicator or the processing at a production line.

Service in the packing process

Using this module, you have all things together to prepare the goods for dispatch in a customized way.

Consolidation

With the consolidation you merge orders. Consolidation occurs between processes, i.e. between picking and service, picking and packaging, service and packaging, packaging and shipping.

Goods-to-Man

This module is used for automated consolidation stores. In this module, the selection of storage locations and the activation processes have been especially adapted to the warehouse equipment such you can fully benefit from the advantages and the speed of the technology used.

Man-to-Goods

This module offers you greater possibilities for structuring the warehouse and flexible access to orders. Goods can be collected such to be mixed or exactly sorted – from racking systems down to storage locations on the floor. Where necessary, storage and retrieval are accomplished by several users.

Packaging

Create a package for shipment out of picked items or entire trading units.

Packaging an entire trading unit, manual

This module informs the user about the order or shipment to which a unit belongs and specifies details about the further processing steps such as weighing or labelling.

Packaging an entire trading unit, automated

The automated packing takes place on the conveyors or via RF-terminals without any further intervention being necessary. Automatic labelling machines or scales may be used.

Packaging process, manual

During this process, contents of order containers are reposted to become packages and, if necessary, quantities are split or consolidated, sub-packaging units and outer packaging units are created, and packaging types are proposed or indicated.

Shipping

By means of the "shipping scan" your packages leave the warehouse at the dispatch gate. Everything is under control – whether at the ramp or on the truck.

Manual

Manual shipping is ensured by mobile end devices that are equipped with the necessary reading units such as bar code scanners or RFID-reading units. The user receives information about shipping, verifies and acknowledges the process. Loading sequences are communicated via dialogues.

Automated

The automated shipping is ensured through conveyor scanners or mobile end devices without further interventions being necessary. Loading sequences were already taken into account by the system in advance.

Inventory

During inventory you create inventory count documents or make inventory corrections. Define different strategies, whether postings are made immediately or after separate evaluation, whether users are allowed to decide by themselves or the four-eye principle prevails.

Zero-crossing

A zero-crossing inventory takes place when a trading unit shall be emptied during order picking. In case of an unexpected zero-crossing, a respective confirmation occurs.

Annual inventory – Goods-to-Man

The annual inventory in Goods-To-Man systems is often subject to simplification procedures which are supported by this module. The trading units necessary for counting are made available at inventory work stations (usually combined with other work stations).

Perpetual inventory – Goods-to-Man

With the perpetual inventory option, all storage locations and articles are counted once a period. During this process, counting actions are triggered periodically and at regular intervals and will take place during the normal warehouse operation. The perpetual inventory control module triggers these periodic counting actions considering thereby the remaining time in the period.

Small-volume inventory

In case the volume of items in a storage location is small and manageable – whether during picking or when adding goods to existing stock – the system may prompt the user to count this volume. As with the perpetual inventory, the possibility of creating added value is used at a storage location where the user is currently working.

Annual inventory – Man-to-Goods

Here, a complete inventory count of the stock is made by a given fixed date. Usually, simplifications are not permitted, unless procedures of the perpetual inventory are concerned. Counting activities are distributed in batches to storage areas such that counting in the warehouse can take place in parallel.

Perpetual inventory – Man-to-Goods

The procedure corresponds to the one of the Goods-to-Man module, but again the storage shelf types or structures are more diverse such that more complex procedures take place. Various manual warehouse types, e.g. block warehouses, however, cannot be subject to perpetual inventory, but require an annual inventory at a fixed date.

Material Flow

Optimize the routing concept and paths and benefit from consolidated transports. The software module defines automatically which device is responsible for which route section and which optimization principle is used.

Manual – Goods-to-Man

In manual systems, too, Goods-to-Man procedures can be applied. Hence, narrow forklift trucks should also perform double cycles; however, aisle changes must be reduced.

Manual – Man-to-Goods

Typical Man-to-Goods applications have a great need for optimization. Not only routes are optimized, but also consolidated transports are created that include more than one container/box or order to allow multiple retrievals or to combine storage and picking/retrieval transactions.

PLC communication

The communication module takes the responsibility for the telegram exchange with the system controllers. Status messages, transport orders and their completion notifications are exchanged reliably.

Automated conveyors

The conveyor controller acts and reacts while communicating with the conveyor PLC. This module is in charge of managing the reporting points and integrating scanners and other devices. The routing controls the degree of utilization and the availability. By means of additionally programmed functions this module allows also integrating actions not being related to transport such as the automatic labelling, automatic goods receiving or shipping.

Sorter and loops

The loop control guarantees control over sorting and distribution loops in your plant. A well-controlled filling level of a loop ensures continuous transport without jamming.

Automated crossways transfer car

Transfer cars or crossways transfer cars are used to connect different locations. These cars are able to transport one or several load handling attachments which must be optimized and occupied in a targeted manner.

Automated storage/retrieval crane

Automated storage / retrieval cranes are highly-performing devices. Often, they can pick up several loading/storage aids simultaneously. Blockades and transport sequences are taken into account. By optimizing the routes, the load handling attachments can be filled to a maximum degree, load changes and individual trips are reduced and double cycles are promoted.

Shuttle

A shuttle is a combination of crossways transfer car and automated storage/retrieval crane which is used in the aisle for storing and retrieving load units. In most cases, several shuttles run one above the other in one aisle having, however, separate working zones.

Compact warehouse

Compact warehouses are for example lifts or paternoster systems. Arranged on trays, these systems hold and manage a lot of smaller load units. The KlinkWARE®-control module for compact warehouses ensures optimized access and transport.

Stacker control system

The KlinkWARE®-stacker control system is based on a "milk run" system connecting different loading and unloading stations which are the result of pending transports. Based on the capacity and capabilities of a stacker or train, this module determines the processing sequences by combining information such as location, priority, waiting time and subsequent transport.

Automated guided vehicle systems (AGV)

AGV connect loading and unloading stations with each other. They travel on paths which are stored in the controller of the AGV. The KlinkWARE®-control module communicates with the control software of the AGV. It administers interim destinations and ensures navigation. Locations and availability are handled and managed in the same way as in the stacker control system.

Interfaces, Integration, Adaptation

As modern, modularly structured software KlinkWARE® integrates into existing system landscapes and offers an interconnection to shipping and special systems.

Host interface

- Articles
- Bills of materials
- Customers / suppliers
- Addresses
- Orders / incoming goods notification
- Delivery orders
- QA orders
- Inventory orders
- Feedback to all procedures

In case a partner system should not use our native interface, we use KlinkWARE®-WRX – our communications module which is able to handle various formats and procedures.

Interface converter

When receiving messages, the interface converters make your format to become ours and when sending, we make our format to become yours.

Adaptation to your needs

To customize standard procedures it is often necessary to make modifications. Here, we always take particular care to maintain full compatibility with the standard so as not to jeopardize release capability and maintainability.

Control Station and Statistics

Increase the efficiency of your system. Identify bottlenecks early to initiate countermeasures in good time.

Comprehensive control station functions for efficient planning, monitoring, control and optimization of the business processes make work much easier. Control stations show what is currently going on in your warehouse. The order and transport control stations provide basic information. How many orders are pending and in which order picking zone? Which urgent order does have a stock problem? How many transports are active in an area or zone? Which packaging station is overloaded? You can see all this and much more at a glance. Special control stations give you an overview of the activities.

How many incoming goods transactions have been already handled today and how many are still open according to the advice notes? What about today's performance of the order picking crew? Where are they lagging behind? How many packages and pallets have been packed today and which order volume is still pending? To know exactly where you stand informs and motivates your employees. Statistical key figures provide an overview of the work already done. Here, not only performance figures are gathered, but also relations are established. Which article was sent out how often in which quantities and out of which order picking area to which customers? This overview already offers optimization potential with regard to packaging units which your suppliers should make available or allows better conditions for your customers when ordering certain quantities or volumes.

Cutting-Edge Applications Based on Proven Technology

**Although the technologies use the same logistic processes,
they feature different options to present them to the outside.**

Processing based on papers

Even though it might appear completely far-fetched in the electronics age to work with lists, there are, however, practical reasons to opt for paper-based solutions. Examples to state here are the operation of an external store without digital infrastructure or an emergency plan in case the wireless network fails.

Processing with handheld RF devices

Handheld RF-terminals are rugged and versatile warehouse companions. They offer the possibility of covering almost all logistical processes. These terminals, however, are limited as to their display possibilities. This is not necessarily a disadvantage. Terminals focus on the corresponding process and give clear instructions.

Mobile web browser applications

Browser applications mainly serve information and administration purposes. They are platform-independent, can be reached while away from the office, are easy to operate and intuitive. Printing even of bar codes is possible just like that. But also processing modules are operated remotely when no work station application is necessary.

"By-light" procedures

The option of guiding the user by visual signals is commonly used in areas requiring high speed and high accuracy and where distances to go a very short.

"By-voice" procedures

Basically, Voice over IP devices allow the same functions to be performed as with handheld RF-terminals. Information output to the user again is reduced. These devices have been designed and developed for simple announcements and clear commands and are not able to read out complete texts. In the voice modules, the processes are streamlined and thus permit less deviations from the standard procedure.

"By-vision" procedures

Trendsetting collection and registration system by means of smart glasses. During order picking the picker has both hands free, while special eyeware visualizes the data required.

Forklift terminals

Basically, forklift terminals are able to fulfil the same functions as handheld RF-terminals. Here, too, we use terminal server sessions. Forklift terminals, however, mostly offer a larger display for providing information and thus make operation more easy.

Work station dialogs

Stationary work stations must be highly efficient as they have higher costs due to a less flexible use. Special KlinkWARE® applications ensure highest efficiency as they are leading with respect to ergonomic aspects and feedback to the user (e.g. browser applications). Many of these applications are optimized for touch screens to allow intuitive handling.

The applications can be installed locally on the computers (fat client) or operated via a terminal server (thin client variant).

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