LFS – Logistics Focused Solutions

Integrated total solutions

Warehouse-Management by E+P
The internationally leading expert for warehouse logistics

LFS.
Warehouse Management by E+P

Contents

LFS – Logistics Focused Solutions

Transportation Management Solutions
· Route Planning
· Telematics
· Transit Management

Warehouse Management Solutions
· System Guided Operations

Cloud and Hosting Solutions

Material Flow Controller

Yard Management

Pick Management (Pick-by-Voice, Handhelds, RFID, Pick-by-Light, Pick-to-Belt)

Stock Control
· Inventory Management
· Supports VAS – Value Added Services

Yard Management for vehicles with RFID and Video

Video Documentation

Dock Management

Transport Management
· Calculation
· Loading
· Integrated Shipping System

Dashboards
· Resource Management
· KPI's
· Job Control

LFS.
Warehouse Management by E+P

Full integration with

SOFTWARE SAP Partners
SAP Certified Integration

Microsoft Partner
Silver Independent Software Vendor (ISV)

Microsoft SQL Server

ORACLE Gold Partner

JDEdwards Enterprise Software

IBM DB2

IBM iSeries

Windows

LFS – Logistics Focused Solutions

The modular LFS warehouse management system can be used across various industries and is designed both for simple and more demanding requirements. The standard system supported by a relational database controls the entire material and information flow in logistics centres by means of dialogue supported applications.

A system for all requirements

The warehouse management system with a capacity for multiple clients and corporate groups is suitable for international, multilingual use in the commercial sector, as well as in the production and logistics service industries. LFS guarantees an increase in process and procedural efficiency, facilitates noticeable savings and long-term maintainability at low costs. This system can be used to automatically optimise the use of all warehouse resources, such as staff, warehouse technology and conveyor technology. Furthermore, this extremely reliable solution enables continuous transparency regarding the current situation in all manual and automated warehouse units.

The high development standard of the LFS warehouse management system guarantees customers maximum investment security and is future-proof; it also ensures high functionality and an extremely economical quality product. To safeguard this software investment, Ehrhardt + Partner also offers its customers a highly modern, fully furnished logistics centre for demonstration purposes. Individual processes and warehouse requirements can be shown in practice even before purchasing the warehouse management software. Consequently E+P gives you early assurance that by purchasing the LFS you are acquiring a product optimally tailored to your current and future requirements.

The warehouse management system for all platforms

With the LFS, Ehrhardt + Partner is offering an exceptionally efficient and flexible warehouse management system for controlling the entire material and information flow in logistics centres. The system was originally developed on the IBM i5 platform (formerly the AS/400) and today is fully accessible with all functions for Linux and Windows platforms as well. LFS is distinguished by a consistently high performance and reliability on all platforms.

The warehouse management system runs on Linux, Microsoft Windows and the system IBM i5. Programming takes place with a single-code base ensuring that all the features of the high-performing modular system are preserved on the preferred hardware and operating system. The operation of the warehouse management system is identical on all systems.

LFS runs trouble-free on all market-leading data bases like MS SQL, MySQL, Oracle and DB2 from IBM. Being able to adapt LFS to the standard data bases already used by the customer is a decisive investment advantage that can reduce expenses.

LFS is characterized by a consistently high performance and reliability on all platforms.

Open system solution for your IT architecture

Due to its open interfaces, the LFS warehouse management system can be optimally integrated into existing IT landscapes. It goes without saying that the LFS system has communication interfaces with all conventional ERP, MMS and MRP systems; likewise there are services for use in SOA environments, easy connection of software systems programmed specific to the customer or independently developed software systems.

For example, the warehouse management system has standard interfaces to ERP systems like SAP, ORACLE, STEEB, Microsoft Dynamics, COPA, Lawson, J.D. Edwards, MAPICS, SoftM, Baan and many more. Reliable integration of LFS into these systems and connection to prevailing carrier haulage, customs and online shop systems has already been put to the test in multiple projects.

Problem-free data exchange using computers and other software systems via EDI, IDOCS, XML, FTP, DDM, TCP/IP MQSeries socket connections, etc. is guaranteed. LFS also supports requirements stemming from ISO 9000 certification with regard to product identification and material flow control.

LFS as a central solution for your warehouse logistics

The total solution for your individual task definitions

The basic version of LFS is available as a preconfigured starter package. As a directly operational, inter-site warehouse solution, this basic package fulfils all the fundamental requirements of warehouse management with extensively uniform logistical basic requirements. All other modules are already pre-installed and can be activated at any time as required. By using starter modules, the system achieves high economic profit even with small warehouses. Due to the high degree of parameterisation, the LFS can also be easily adapted to future, customer-specific processes and procedures. The LFS grows with your needs and requirements without having to change existing databases. The warehouse management software can be operated and managed by employees inexperienced in software use; even comprehensive system maintenance is usually carried out by customers themselves. The necessary know-how for this is conveyed by E+P in correspondingly planned training and seminar sessions.

With LFS as a standard system for warehouse management, we have created standards in terms of innovation, development, economic efficiency and reliability, and thereby continually set new standards for warehouse logistics.

Efficient warehouse logistics are counted amongst the deciding factors for success in all areas, such as commerce and production, and for logistics service providers as well. For Just-in-Sequence strategies, the supply chain must be perfectly organised and function smoothly. In this respect, the LFS is a central building block in your supply chain. This powerful system ensures optimised processes, maximum transparency and efficiency in the warehouse and consequently over the entire supply chain. The result is a noticeable reduction in your logistics costs.
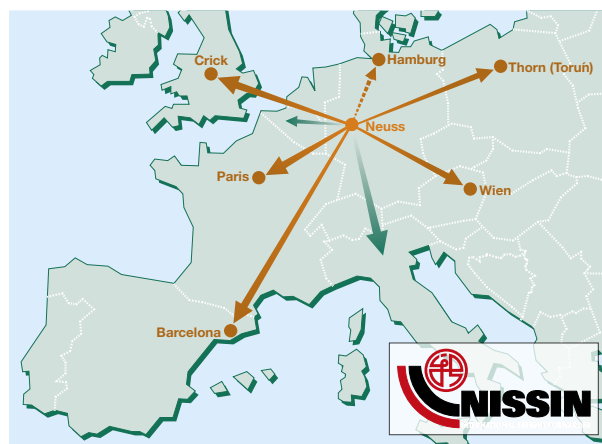
Central software installation for different countries and warehouses

The LFS can also be used centrally within a group of companies forming an extremely economic solution: the entire material flow and stock management of a multinational company in countries of different languages can be implemented with a single software installation. The LFS is currently available in more than a dozen languages. This saves on high investments in extra EDP personnel and cost-intensive hardware at several locations.

LFS as a hosting and cloud solution

For strategic solutions in information technology, the company has created a carefully matched outsourcing service for the management and operation of the warehouse management system and the IT infrastructure it requires. The subsidiary EPX – Ehrhardt + Partner Xtended was founded especially for those solutions. In a modern computer center, with a powerful high-availability solution, hosting is implemented for international companies from Germany, Eastern Europe, and Brazil.

The range of services also includes, as well as straightforward hosting, the managed services and a comprehensive cloud computing facility. Extensive re-investments in new server hardware can therefore be avoided, and with this offer users benefit from the vast know-how of the software manufacturers, predictable and transparent costs, reduced investments in software and personnel, and the universal logistics skills of the entire E+P Group.

As shown in this example, international customers use just one version of our LFS software with multi-client capacity to organise their entire material flow and stock management in countries of different languages and in warehouses with differing requirements.

Setting standards with innovations

Pick-by-Voice

As one of the first warehouse management systems in Europe, the LFS enables unproblematic Pick-by-Voice use in warehouses. Pick-by-Voice technology has been available for many years as part of the standard scope of the warehouse management system and can be activated easily and quickly at any time, or it can be adapted by parameterisation to new processes and procedures. Efficiency can be increased by up to 35 percent depending on the project, type of use and environment of use. Fundamental results of using Pick-by-Voice with the LFS are a considerable reduction in the error rate and sales returns, an extremely high user acceptance and an increase in picking accuracy by more than 99 percent.

Vocollect PartnerNet
Total Solution Provider
—— PLATINUM LEVEL ——

As a certified Vocollect Voice Total Solution Provider, the E+P Group fulfils the highest quality requirements and standards in terms of development, integration and support of Pick-by-Voice solutions.

Voice service and support

The Vocollect Repair Centre means that E+P can offer Vocollect users a comprehensive, immediate after-sales service (certified by the manufacturer Vocollect) for all products from this globally leading supplier of voice-based picking systems. The E+P support services include, for example, complying with individually defined deadlines and exchange guarantees within the context of maintenance and repair work as well as free provision of preconfigured hire equipment. With the aid of online monitoring, Repair Centre customers receive maximum transparency during repair and maintenance work.
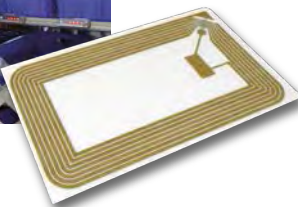
RFID

E+P was already integrating RFID technology years ago into the logistical processes of the LFS warehouse management system. RFID technology is therefore included in the standard scope of this warehouse management software and is available at all times to customers of this software specialist. Furthermore, the E+P subsidiary ITL (Institut für technische Lösungen in der Logistik; trans. the institute for technical solutions in logistics) offers a detailed examination of the potential use of RFID within customer environments using feasibility studies. Close collaboration with scientific research and development facilities is also characteristic for this company group's area of work.

Multi-order picking

The picking cart for multi-order picking as developed by Ehrhardt + Partner enables time and path optimised parallel picking of up to 40 orders. LFS guides the warehouse employee with his picking cart from one picking station to the next, using an optimised path route. At each picking station, the employee is prompted to pick the required item quantity for an order and to place this quantity in a container marked with a light signal, and then to acknowledge the process. This continuously ensures targeted allocation of the picked item to the corresponding order. A substantial reduction in picking errors is the result.

LFS – a system solution for all types of work

Professional connection of automatic warehouse units

The LFS is also outstandingly suited to professional use in manual and automated warehouse units. Over the last 25 years, the system has been reliably connected to all warehouse and conveyor technologies available on the market. For example, this includes automated high-bay warehouses, paternoster or shuttle systems, automated guided vehicles, electronic scales technology, as well as online wireless systems for picker and forklift control. Moreover, extremely varied material flow computers have been successfully connected to the LFS in multiple reference projects.

Systematic warehouse modernisation

Modernisation of warehouses places the highest demands on software systems' flexibility, functionality and reliability as well as on the specialist knowledge of the partner company commissioned with modernisation. An essential focus of work for Ehrhardt + Partner is reliable and deadline compliant modernisation of manual and automated logistics centres in line with the set budget. Over the last few years, LFS has been reliable, successful and quick integrated within the context of many complex modernisation projects. We are happy to present you with reference projects which match your task definitions. The E+P modernisation experts look forward to your enquiry.

Sound advice and scheduled implementation

On the basis of more than twenty years of extensive project experience, Ehrhardt + Partner offers its customers sound warehouse expertise in warehouse planning and consulting, warehouse restructuring, design of material flow and process structures as well as in selecting hardware, software and warehouse equipment.

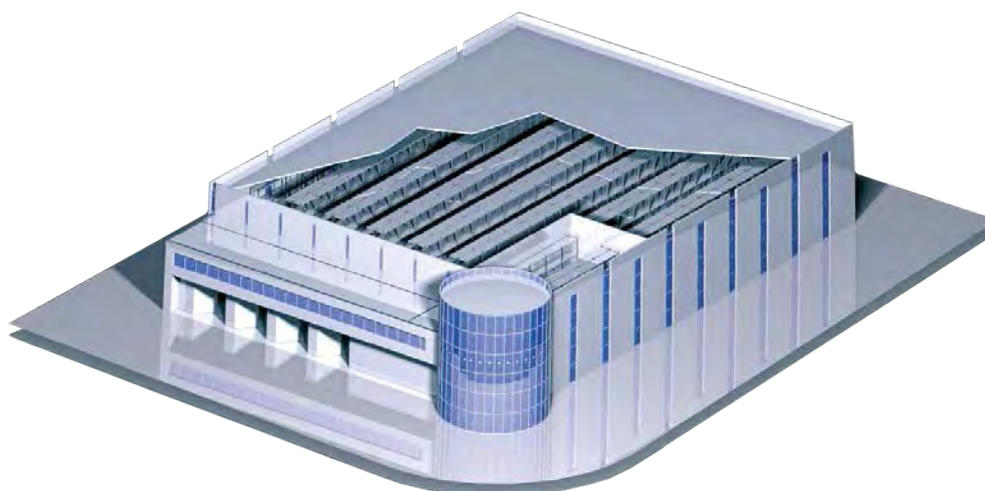## Responsibility for implementation as main contractor

Ehrhardt + Partner has efficiently implemented complex customer projects for a long time now on account of its expertise. Over the last few years, this warehouse expert has managed and implemented an increasing number of major projects as main contractor. This means that customers can award their projects entirely to E+P (whether a new-build or warehouse modernisation) and profit from this "one-stop" solution: from initial idea to developing strategies and support during implementation up to the final realisation, Ehrhardt + Partner is your accountable contact partner.

Return on investment and concrete integration results

Experience has shown that our customers notice a return on investment in 18 to 20 months. The capacity of transport equipment is exploited between 50 and 70 percent better as a result of software implementation.

Furthermore, sales returns stemming from picking errors likewise drop by around 50 to 70 percent. Customers also record a noticeable reduction in employed personnel capacities by around 20 to 40 percent.

Due to the LFS's high level of functionality and related simplicity in changing parameters, you can achieve savings of up to 70 percent with future upgrades and modifications in comparison to other systems.

LFS modules for your individual warehouse management solution

The modular layout of the LFS is the basis for individual tailoring software to suit your requirements. The system's high level of standardisation and vast number of available, tried-and-tested modules has a beneficial effect on costs for you.

Maintenance and management of warehouse sites and bin locations

- Dynamic-random bin allocation taking into account A-B-C criteria
- Cross-section bin allocation
- Controlled overflow onto larger bins
- Consideration of customer specific warehouse requirements, such as e.g. temperature zones, etc.
- Fixed bin allocation (automatic and manual)
- Storage routines
- Manual bin allocation
- Dynamic field allocation
- Bin segmentation
- Warehouse without bin allocation
- Block storage
- Flow rack aisles

Storage

- Splitting, repacking
- Cross-docking
- Quality control
- Product labelling
- Data transfer from customer's goods-in or MRP/BDE system
- Batch management, batch tracking, serial number management, BBD, FiFo
- Barcode labels

- Slot management
- Two-stage bin allocation
- Use of technical aids, e.g. Pick-by-Voice, mobile data acquisition, transport equipment...
- Management of several stock modules at one bin location or loading unit
- Management of empty goods, pallet account keeping

Stock control

- Classification of total stock by:
  - blocked inventory
  - reserved inventory
  - freely available inventory
- Differentiation between own inventory and consignment inventory
- Separation into duty-paid and non-duty-paid stock
- Controlled reservation of individual stock modules for particular orders or customers
- Display of the reserved quantity arranged by orders, users, etc.
- Differentiated identification of stock by batch, goods-in No. BBD, orders...
- Article types
- Hazardous goods handling

Retrieval/picking

- Retrieval of complete work packages based on the provision of bills of delivery, customer and production orders or internet shop orders
- Optional allocation of each retrieval by cost centre, customer/production order, cost unit, project number, etc.
- 1-stage/2-stage picking
- Pick and Pack principle
- Multi-order picking, path optimised processing

Packing station dialogue

- Registration/scanning of serial numbers
- Generation of package content lists
- Packing goods into shipping units, generation and printing of barcode addresses/delivery labels, e.g. for parcel services such as UPS, GLS, DPD, SYSTEMPLUS, POST and generating SKU and IDS router labels
- Two-stage packing
- Provision of data for all products in a package with batch No., BBD/expiry date, serial number, etc. for passing on electronically to the receiver, corresponding with consignment number and consignment tracking
- Printout of delivery lists according to parcel service, provision of consignment data for the corresponding parcel service
- Consolidation location management, control before and after picking

Shipping

- Routing for Post, DPD, UPS, GLS etc.
- Loading scanning
- Handling of master shipping units
- Management of empty goods, pallet account keeping
- Load space calculation
- Freight cost calculation
- Integrated shipping system
- Shipment tracing

Transportation management

- Route planning
- Telematics
- Transit management

Stocktaking

- Sample stocktaking via interface
- Zero level control stocktaking
- Permanent stocktaking, stocktaking on a specific day
- Interface for commercial settlement of stocktaking differences
- List of stocktaking differences
- Stocktaking analyses

Control of various types of storage technology, such as:

- Automated high-bay warehouses
- Paternoster and shuttle systems
- Automated guided vehicles (AGV)
- Online wireless systems for picker and forklift control
- Electronic scales
- RFID
- Pick-by-Voice
- Pick-to-Belt
- Pick-by-Light
- Integration of material flow computers to control automated warehouse components

LFS modules for your individual warehouse management solution

Transport control system

- Path calculation for each means of transport, avoidance of empty trips

- Priority control of pending transports, inc. time-dependent

- Registration of idle time at handover points and buffer locations for improved calculation of transport times

- Automatic transmission of optimised transport orders to forklift drivers

- Support for multiple transporters, e.g. clamp forklifts, triple forklifts

Statistics/KPIs

- Comprehensive availability of statistical functions

- Warehouse occupancy

- Picking numbers and times

- Performance statistics

- Order numbers

- Order, goods-in and transport monitoring

- Cycle times for each order

- Turnaround rates of individual items and reach analysis

- Frequency of individual items at the picking station

- Individual queries by internal or central data warehousing

Graphic user interface

- Display of digital product images during stock inquiries or during picking

- Interface operated via internet browser

- Access to all functions via the internet

- Graphic display of statistics

- Graphic warehouse control station

- Supports touchscreen wireless data equipment

Kit-building

- Supports formation of sets for the display structure

- Supports goods kit-building

- Administration of piece lists

Quality assurance

- Handling of freely definable quality statuses and quality characteristics
- Generation and processing of quality assurance orders
- History of changes in quality statuses (user, data...)
- Definition of quality assurance personnel via authorisation rights

Other functions

- Monitoring of the reported stock level with automatic generation of restocking suggestions
- Parameter control, e.g. for restocking at a picking station, label printouts, etc.
- Statistics about access frequency, overviews of allocation, occupancy, stock lists, A-B-C analysis

- Different concepts for organisation and provision of emergency operation
- Barcode labels for machine processing or product identification
- Invoicing of logistics services
- VAS – Value Added Services
- Sending of e-mail or SMS when defined events occur or notifying delivery
- Notification of delivery by electronic data transfer for each package/pallet
- 3-D visualisation of warehouse processes
- Yard Management

Your individual requirements can be best established on-site in a personal advisory meeting. In this context, we would be happy to show you concrete possible solutions and to uncover optimisation potential. We will illustrate the current requirements you have of your prevailing warehouse processes in our logistics centre and will present these processes to you under live operating conditions. Take this opportunity for your warehouse.

LFS modules for your individual warehouse management solution

Integrated picking technologies

Paper-based picking by picking lists

- Implementation of paper-based picking by picking lists or paper-based picking by picking lists accompanied by other picking technologies
- Picking lists for individual warehouse locations or collective picking lists for several orders over several warehouse locations
- Printout and use of barcode labels
- Path optimised picking lists
- Precalculation of consignment loading unit (Pick and Pack principle)
- Multi-order picking
- Multi-stage picking

Wireless

- Advantages compared with paper-based picking by picking lists: high data security, reduction of picking errors and a considerable increase in productivity amongst personnel
- Immediate, event-controlled online restocking
- Continual online overview of order progress and corresponding time stamps
- Clarity and transparent quality assurance
- Overview and history of personnel use
- Character-oriented and/or graphic interface

Pick-by-Voice

- Increases picking speed by up to 50 percent along with high picking reliability
- Free hands for the picker and no visual contact with a display necessary

- Immediate, event-controlled online restocking
- Use of collective transport equipment or MDA for storage, retrieval and relocation
- Easy and quick learning as communication is dialect-neutral

RFID

- Can be used for product identification (batch, EAN, serial numbers) and for loader identification (pallet or SKU)
- Connection of an RFID supported picking cart for multi-order picking
- Connection of RFID group detection, e.g. for industries and sectors such as pharmaceuticals, entertainment electronics, electronic products, textile industry and document management

Pick-by-Light

- Supplementary option for fast and extremely reliable picking by using optically unique light signals
- Reduction of erroneous picks during picking
- Short picking paths as a container conveyance system is usually connected to the Pick-by-Light technology

Pick-to-Belt

- Time-saving processing of several parallel orders
- Short paths due to parallel and cross-order picking
- Automatic sorting of picked goods by a downstream sorter into individual orders or receivers

Comprehensive service and qualified training sessions

As one of the leading warehouse experts internationally, Ehrhardt + Partner will also support you competently and extensively following project conclusion in all questions and areas of warehouse logistics. E+P offers its customers worldwide a comprehensive service, support and training programme.

International service and perfect support

After project completion, Ehrhardt + Partner offers its customers a multilingual service hotline for comprehensive support. Qualified warehouse experts are available to help you round the clock, seven days a week. This ensures that E+P can help every customer worldwide in just a few minutes. E+P experts can access the customer system online by remote data transfer or via an internet connection. Corresponding maintenance contracts prove their worth with flexible terms and performances and can be individually adapted to suit customer wishes.

Warehouse training sessions and seminars

Especially when switching to a new warehouse management system, instructing new employees or installing new technologies or software systems, it is important to qualify warehouse personnel for the new requirements and tasks. With the logistics training centers in Germany and Dubai, the E+P Group can provide the ideal conditions for professional warehouse training courses and seminars. Both centers, the 900 square meters German IAW – Institute for Applied Warehouse Logistics – and the 1.465 square meters LSC – Logistics Solutions Center – in the Middle East are equipped with the very latest warehouse technology for training with the focus firmly on practical applications.

The range of training sessions offered by Ehrhardt + Partner includes the following courses and workshops:

- The fundamentals of warehouse processes
- Key user training for the LFS
- Statistics and KPIs with the LFS
- System support for the LFS
- RFID workshop

References

The LFS warehouse management system is being successfully used internationally in commerce, production and service providing, as well as by haulage companies and logistics service providers. Renowned referee customers for the warehouse management system include for example the following companies:

Ehrhardt + Partner – internationally leading expert for warehouse logistics

Founded in 1987 as a family company, Ehrhardt + Partner is now an internationally active group of companies with more than 300 employees in six locations. Engineering teams with practical experience in logistics and software engineering continually develop new solutions in warehouse logistics for future challenges. The solutions of the group are successful on all continents.

The E+P Group product range incorporates the LFS warehouse management solutions, Pick-by-Voice as well as wireless and RFID data solutions, material flow computers, transportation management solutions and cloud and hosting services.

In addition to warehouse modernisations, warehouse seminars, warehouse planning and consulting, Ehrhardt + Partner also takes charge of complex warehouse projects as main contractor, on request from customers. E+P also runs a comprehensive Repair and Support Centre.

Throughout the world, customers appreciate

- the sound logistics advice
- the extensive expert knowledge of warehouse logistics
- professional project management
- short project turnaround times
- on-time commissioning
- reliable support that this warehouse expert provides.

1987 Since

The Power of Innovation

Data. Facts. Figures.

The success of the Ehrhardt + Partner Group and its high-quality warehouse solutions
can be concretely expressed by the following numbers:

Number of customers: over 450

Number of customer projects each year: currently about 40

Logistics centers implemented: about 700

Number of employees that work daily with LFS: about 40,000

Number of system language versions: currently 15

Number of picks worldwide with LFS per day: about 35 million

The Power of Innovation

since 1987

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SOLUTIONS

EHRHARDT + PARTNER
XTENDED

EHRHARDT + PARTNER
CONSULTING

INSTITUT FÜR ANGEWANDTE
WAREHOUSE-LOGISTIK

EHRHARDT + BOMAG
LOGISTICS

Institut für technische
Lösungen in der Logistik

E + P

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