



**LENNERTS**  
& PARTNER GmbH

## **LP-SYSTEM**

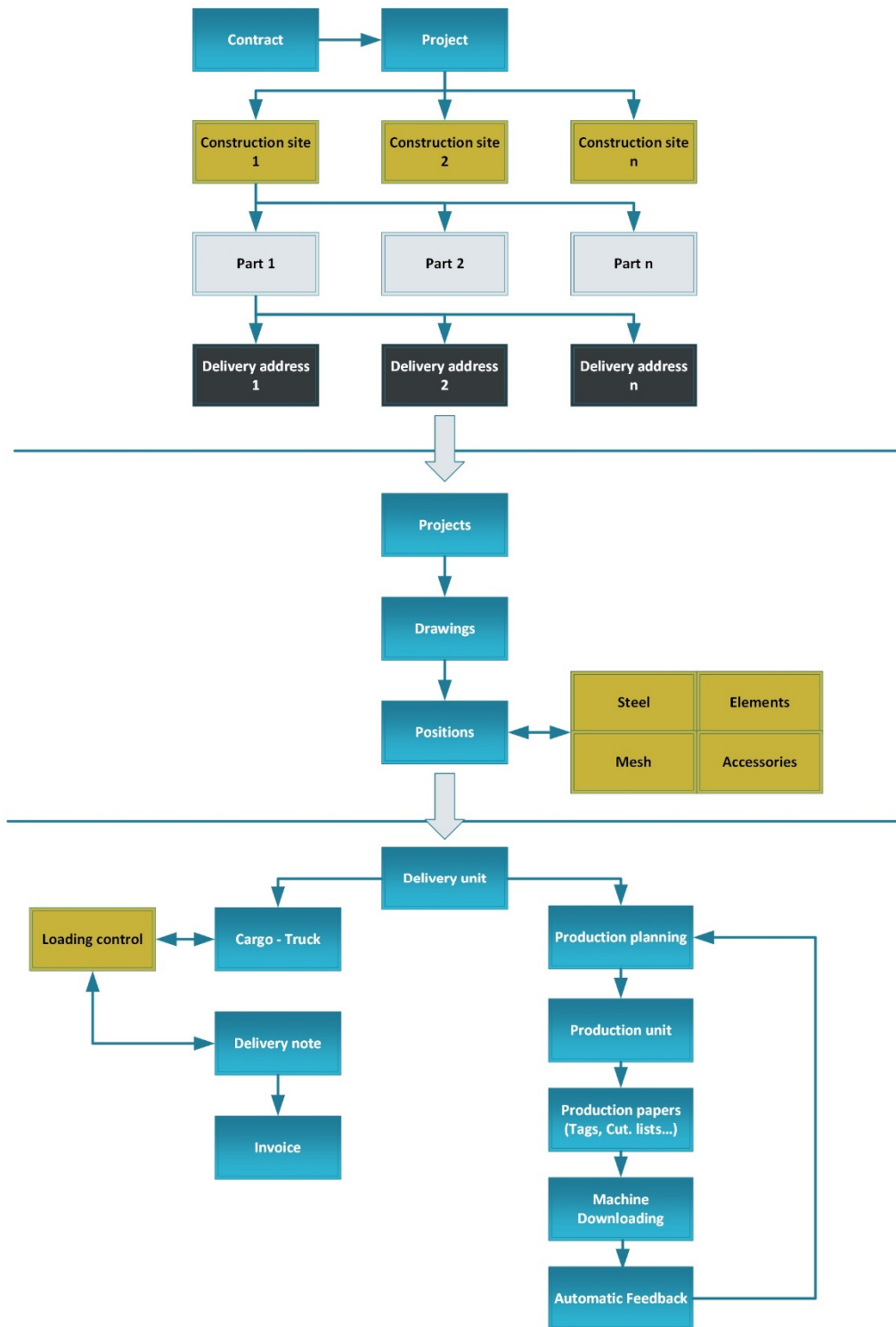
Description

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## I. SCHEME OF PROCESSES INSIDE LP-SYSTEM



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## II. COMMERCIAL SOFTWARE

Herewith you will find a short description of the commercial software for reinforcement of LENNERTS & PARTNER. The program is structured into the following functionalities that are then described more in detail:

- Main Data
- Business Partner
- Contracts/Projects
- Schedule management
- Elements
- Mesh Welding
- Delivery units
- Cargos
- Stock management
- Printing tags
- Delivery note
- Invoice
- Fixing
- Reports - Statistics



## A. MAIN DATA

When initializing the system most of the main data is punched in and does not need to be changed again, for example products, group of products, tag colors, type of freight and so on.

Products

General | Stock | Steel | Mesh | Additional | Component list | External system | Translation | Supplier Details | LIMA | List

Product

Product code **SBA12**

Matchcode SBA12

Kind of product 5 0 ... Distancers

Product group 300 3 ... Spacers - SBA

Description 1 **Spacers - SBA 12 cm**

Description 2 SBA12

Description 3 SBA12

Text of product

Product text prod.

Customs Code

Invoicing code MAT

Cost Account Group **Spacers - SBA**

Summarisation code

Aggregation code2

Sales group

EAN13

☒ Print tags

☒ Product will be

☒ Payment discount allowed

☒ Discount allowed

☐ Various product

☐ Fixing: Always additional entry

☐ Cast required

Discount per coupler in

Min. Restlänge für Muffe in mm

Units

Unit 1 **St**

Unit 2 Pack

Unit 3

Input unit **St**

Display unit **St**

Fixing unit

Factor 1/2 0.00800 Pack/St

Factor 1/3

Weight 0.683 **kg** /St

Valid date

between and

☒ Active product

Creating 11.12.2003

Processing 27.03.2018 DM

## B. BUSINESS PARTNERS

The business partners are all companies which you are in contact with, e. g. customers, suppliers, carriers, etc. Each customer only has to be created once in the system, even if it is assigned to more than one project. Each business partner can have several contact persons. This feature can be used as a phonebook.

Business partner

Order overview Import

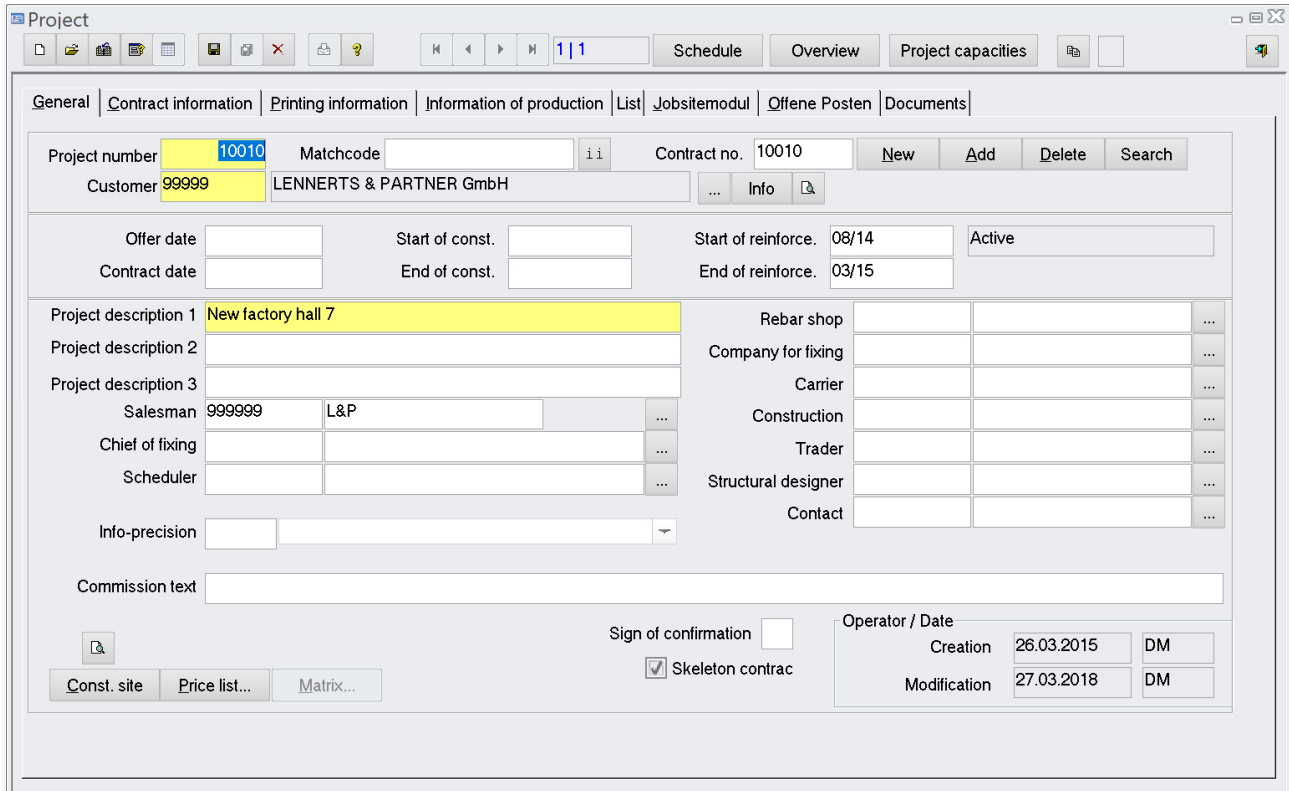
Business partner | Contact partner | Details | Third-party system | Open items | List

BP-No 99999	Kind Customer & Supplier	State Bayern	Salesman 1
Title		Area	Create 28.09.2006 LP
Name1 LENNERTS & PARTNER GmbH		Line of	Process 04.03.2016 LP
Name2		Size	
GL-Code		Valence	Info
Short name		Currency EUR	
Street Mohrenstrasse 12		Turnover 375,00	
Country/Zip D / 96450		Turnover year 87.217,08	
City Coburg		Info1	
Telephone +49 9561 80400		Info2	
Mobile phone		Invoicing data	
Fax +49 9561 804040		Amount insured	from
Contact		Credit limit	until
Home page		Account	<input type="checkbox"/> Bonus system
e-Mail		Excess	<input checked="" type="checkbox"/> Discount allowed
Address line1		Accounting 317225	<input type="checkbox"/> blocked mark
Address line2		Sales tax-ID UstID.012333	<input type="checkbox"/> diverse customer
Address line3			<input type="checkbox"/> print only voucher
Address line4			<input checked="" type="checkbox"/> Active customer
Address line5			
our customer no. with supplier			
Invoice addresses...	LOGO	Price list	Electronic document dispatch

LENNERTS & PARTNER GmbH

### C. CONTRACT/PROJECTS

For each new order, a so-called project is created. This is assigned to the corresponding customer and a construction site name is deposited. In addition, payment terms, members (structural elements), delivery addresses and an order-specific price list with all agreed conditions can be deposited.



Project

General | Contract information | Printing information | Information of production | List | Jobsitemodul | Offene Posten | Documents

Project number: 10010 Matchcode: ii Contract no.: 10010 New Add Delete Search

Customer: 99999 LENNERTS & PARTNER GmbH ... Info

Offer date: Start of const.: Start of reinforce.: 08/14 Active

Contract date: End of const.: End of reinforce.: 03/15

Project description 1: New factory hall 7

Project description 2:

Project description 3:

Salesman: 999999 L&P ...

Chief of fixing: ...

Scheduler: ...

Info-precision: ...

Commission text:

Const. site Price list... Matrix...

Sign of confirmation: ☒ Skeleton contrac

Operator / Date

Creation: 26.03.2015 DM

Modification: 27.03.2018 DM

With this information, the system now only needs information about the price structure and drawings/schedules, and all invoices are printed correctly.



Price list - specific to contract

General | Single prices | Product prices (groups) | Service prices (groups) | Sub Verlegen | Fixing | List

Price list No **1389**

Product main-/sub-group **100 / 0** ... Rebar

Standard price list

Product code **DAPBIV08** ... Rebar - Surcharge for dimension BS1500S Matchcode **DAPBIV08**

Additional price **50,000 / 1 to** ☐ Sum price ☒ discountable

Discount  % ☐ Show discount

Quantity

Kind of

Kind of additional **X**

Base of additional **B**

Price cost acc.

Abbreviation

PMGR	PSGR	Group of products	Product	Additional price	Order quantity	
100	0	Rebar	DAPBIV08	50,000		Rebar - Sur
100	0	Rebar	DAPBIV10	30,000		Rebar - Sur
100	0	Rebar	V-BIV	250,000		Verlegen B
200	0	Standard Mesh	V-LAMA	250,000		Verlegen L
200	0	Standard Mesh				
200	0	Standard Mesh	MSCHNEIDEN	100,000		Mesh - Sur
200	0	Standard Mesh	MBIEGEN	150,000		Mesh - Sur

New F2

Insert F3

Delete F4

Undo F5

#### D. DRAWINGS/SCHEDULES MANAGEMENT

For each drawing/schedule the right contract has to be selected. The drawing/schedule can be divided into different members (structural elements) for which the total quantity to be delivered can be defined. After entering the positions, this can be checked with two functions:

- Resume is the short summary for the schedule
- Steel list is an item list (on screen or printer) including the graphical representation

Schedules - 102616

UNI ML Price list 1389

Schedule Member Bar Mark Mesh Elemente Accessories List Given times Schedule No. AT-201 / A

Member 1 - ... 1 X member wise

Bar Mark 1

No. of bar 24 No. off (sale) 24 No. off (prod.) 24

Ø (Sale) 8,0 mm Ø (Prod) 8,0 mm

Length 1,820 m Length (sale) 1,820 m Length (prod) 1,720 m

Steel No. IV Steel No. (sale) IV Steel No. (prod) IV

Shape Code 612 Note (sales) Note (prod.)

Given bending pin Selected bending pin 32

Given prod. line Selected prod. line StirrupB1

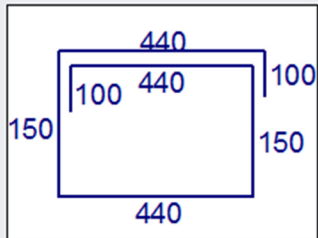
Finishing

Bar Mark	Steel	No. off	Diameter	Length	Shape	Length prod	Cust. Weight	Prod. Weight	Total
1	IV	24	8,0	1,820	612	1,720	17,25	16,31	4
2	IV	16	12,0	14,000	1	14,000	198,91	198,91	22
3	IV	16	12,0	3,780	1	3,750	53,71	53,28	6
4	IV	8	16,0	16,620	1	16,590	210,08	209,70	13
5	IV	99	10,0	3,020	508	2,916	184,47	178,12	29
6	IV	12	12,0	3,520	612	3,371	37,51	35,92	4
7	IV	4	12,0	3,380	612	3,231	12,01	11,48	1
8	IV	12	10,0	2,060	508	1,956	15,25	14,48	2

ma Shape Code (prod.) 612

Delete (F4) Dimensions (F6) Prod. dimensions (F7) Release (F8) Varying (F11) Create couplers Steel charged by piece

Set finishing Reset



A diagram of a U-shaped channel cross-section. The width of the channel is labeled as 70, and the height of the channel walls is labeled as 390 on both sides.

[illegible]



## F. MESH WELDING

This module enables to create free definition of customized meshes and produce it on a mesh welding line. The creation is made within the contract whereby the created meshes can also be shown on delivery note and invoice.

**Mesh welding**

Plan-Nr / Index: AT-201.1 A MeshW

Partial schedule: Bar mark: 1

Element: MESH Number: 1 Weight/Sheet: 93,63

Length: 6000 mm Overhang below: 75 mm Schweissklassifikation:   
 Width: 2400 mm Overhang right: 75 mm   
 ☐ Compact storage

**Horizontal**

	Steel g	Dia.	First distal	Number of distances	Distance	Bar len	Bar offset	Distance to side	Double wire
New F2	IV	8	75	33	150	2400	0		
Delete F4	IV	8	150	5	150	1800	0		

**Vertical**

	Steel g	Dia.	First distal	Number of distances	Distance	Bar len	Bar offset	Distance to side	Double wire
New F7	IV	10	75	11	150	6000	0		
Delete F8	IV	10	150	3	150	5150	0		

Show Ok

With downloading of the mesh welding line the productivity of the machine is increased and additional manual entries or wrong entries do not arise.

## G. DELIVERY UNITS

After the input of drawings/schedules you can create the delivery units. Here it can be defined which member (structural element) with how many pieces needs or should be delivered at this date. Each tag which will be printed later gets a serial number.

## H. CARGOS

With this function you can define with which truck you want to deliver which delivery units. This defined cargo is the basis for printing delivery note and invoice.



Carques

Cargoes Arrange Cargoes Cargoes weights List

Cargo no. 6267 Carrier Transport date 19.02.2015 00:00

Delivery Units which is not assigned to a Cargo Project Delivery date Dispatch postal code Refresh

Del. unit No.	Delivery date	Customer name	Project	Construction site	Delivery address	Dispatch	Order no.	Schedule
451	18.06.2015 00:00	LENNERTS & PARTNER GmbH	9057	Testprojekt Version 5.045.1	Testprojekt Version 5.045.04	12345	102870	WELDMESH
452	08.09.2015 00:00	LENNERTS & PARTNER GmbH	9050	Testprojekt 5.044.11	VA-Versandadresse	96450	102872	BAM2
453	08.09.2015 00:00	LENNERTS & PARTNER GmbH	9050	Testprojekt 5.044.11	VA-Versandadresse	96450	102871	BAM
454	08.09.2015 00:00	LENNERTS & PARTNER GmbH	9050	Testprojekt 5.044.11	VA-Versandadresse	96450	102873	BAM3
101	23.09.2015 00:00	LENNERTS & PARTNER GmbH	9061	Gamlestaden	Gamlestaden	41252	102879	SODRA DELEN 1
457	24.09.2015 00:00	LENNERTS & PARTNER GmbH	9061	Gamlestaden	Gamlestaden	41252	102882	NORRA DELEN 1
466	01.03.2016 00:00	LENNERTS & PARTNER GmbH	10001	Tunnel 1	Presentation sample	96450	102888	245 DF-S
461	04.04.2016 00:00	LENNERTS & PARTNER GmbH	10011	Neubau Fabrikhalle 8	Neubau Fabrikhalle 8	96052	102898	TEST

Delivery Units of Cargo Part-delivery + - Bar marks

Load. Seq.	Del. unit No.	Delivery date	Customer name	Project	Construction site	Delivery address	Dispatch po	Order no.	
2	432	19.02.2015 00:00	LENNERTS & PARTNER GmbH	10011	Neubau Fabrikhalle 8	Neubau Fabrikhalle 8	96052	102671	B-2
3	433	19.02.2015 00:00	LENNERTS & PARTNER GmbH	10011	Neubau Fabrikhalle 8	Neubau Fabrikhalle 8	96052	102746	1 R-2
1	434	19.02.2015 00:00	LENNERTS & PARTNER GmbH	10011	Neubau Fabrikhalle 8	Neubau Fabrikhalle 8	96052	102778	1 SV
4	435	20.02.2015 00:00	LENNERTS & PARTNER GmbH	10011	Neubau Fabrikhalle 8	Neubau Fabrikhalle 8	96052	102666	AT
5	436	20.02.2015 00:00	LENNERTS & PARTNER GmbH	10011	Neubau Fabrikhalle 8	Neubau Fabrikhalle 8	96052	102780	1 SV
6	437	20.02.2015 00:00	LENNERTS & PARTNER GmbH	10011	Neubau Fabrikhalle 8	Neubau Fabrikhalle 8	96052	102801	1 S2
7	438	20.02.2015 00:00	LENNERTS & PARTNER GmbH	10011	Neubau Fabrikhalle 8	Neubau Fabrikhalle 8	96052	102828	ST

## I. STOCK MANAGEMENT

This function manages and verifies the physical stock and any existing stock from your customer. Incoming material is automatically booked to and outgoing material automatically from the stock when the delivery documents are created. Weight differences between the sales and production weights are automatically taken into account.

## J. TAG PRINTING

You can print the tags by selecting the delivery units. Within the delivery unit sorting is performed according to diameter, straight / bent, drawing/schedule number and length. With the help of the production planning system LP-ProdPlan the tags can be printed per machine. The sort criteria can then be defined differently for each machine.

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#### K. DELIVERY NOTES

Delivery notes can be printed for one or more cargos (single or collective delivery note). A reprint is possible at any time. If required, it can also be displayed in advance on the screen (applies to all printouts).

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#### L. INVOICES

Here the invoices for a selected delivery note can be printed. A reprint is possible at any time. If necessary, this can also be displayed in advance on the screen (applies to all printouts).

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#### M. FIXING

The fixing module allows complete projects in a fixing project to be invoiced accumulated or settled individually. Drawings for fixing can also be created manually from stock items.

All fixing weights can be changed again and stock items can be added. A fixing price list provides extensive billing options. Fixing credits are easy to create.

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#### N. REPORTS - STATISTICS

Of course, LP-SYSTEM provides many statistics and reports. Here is a short excerpt:

- Product turnover statistic
- Total summary
- Stock and stock movements report
- Project turnover statistic
- Delivered quantities report
- Weekly delivery preview
- Invoice list
- Delivery note list

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### III. ADDITIONAL MODULES LP-SYSTEM

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#### A. QUOTATION – ORDER CONFIRMATION – PROFORMA INVOICE

With this module it is possible to print a quotation or an order confirmation directly from the drawing/schedule dialog after entering the steel, mesh and accessory items. In addition, you can print a proforma invoice after the delivery note printing and convert it to a correct invoice after a successful check.

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#### B. ORDER BALANCE REPORT

By project, the total tonnage, already delivered tonnage and the tonnage still open are listed. Based on some selection criteria, you can display the statistics accordingly and also pass them directly to EXCEL.

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#### C. USER PROFILES

Each user can be assigned to certain user rights for all essential functions in LP-SYSTEM. It can thus be determined whether an employee should have read, execute or write permissions.

The user rights of an employee can be copied to other employees. The module also allows to create user groups and assign these rights. Hence it is much easier and quicker to administrate the rights.

User profiles

Users | Groups | Modul/Right | Branch 1 - L&P - Sales

Operator: L&P

Password:

Current password:

New password:

Confirm new password:

☐ Account blocked

Groups:

Administrators

Everyone

Module/Right	Subs	Operator right	Standard right	eff. right
Cargoes	<input checked="" type="checkbox"/>	Full	Full	Full
Cash Sales	<input checked="" type="checkbox"/>	Full	Full	Full
Changing project status	<input checked="" type="checkbox"/>	Full	Full	Full
Construction site	<input checked="" type="checkbox"/>	Full	Full	Full
Contract pricelist	<input type="checkbox"/>	Full	Full	Full
Contracts	<input type="checkbox"/>	Full	Full	Full
Credit item	<input checked="" type="checkbox"/>	Full	Full	Full
Delivery note interface Navisi	<input checked="" type="checkbox"/>	Full	Full	Full
Delivery reports	<input checked="" type="checkbox"/>	Full	Full	Full
Delivery units	<input type="checkbox"/>	Full	No Access	Full
DMS Konfiguration je Dokum	<input type="checkbox"/>		No Access	No Access
DPS / DIL	<input checked="" type="checkbox"/>	Full	Full	Full
Drawing management	<input type="checkbox"/>	Full	Full	Full
EDOK all Documents	<input type="checkbox"/>		No Access	No Access
Elementdefinition	<input type="checkbox"/>	Full	Full	Full
E-Mail Server Pflege der Vert	<input type="checkbox"/>		No Access	No Access
Emailqueue	<input checked="" type="checkbox"/>	Full	No Access	Full
E-Mailversand Konfiguration j	<input type="checkbox"/>		No Access	No Access
E-Mailversand Konfiguration j	<input type="checkbox"/>		No Access	No Access
Employees	<input type="checkbox"/>	Full	Full	Full
Environment parameter	<input type="checkbox"/>	Full	Full	Full
Error types	<input type="checkbox"/>	Full	Full	Full
Export invoices	<input checked="" type="checkbox"/>	Full	Full	Full
Fixing	<input type="checkbox"/>	Full	Full	Full
Fixing statistic	<input checked="" type="checkbox"/>	Full	Full	Full
Import of drawings/delivery ur	<input checked="" type="checkbox"/>	Full	Full	Full
Interface accounting system	<input checked="" type="checkbox"/>	Full	Full	Full
Interface MMS	<input checked="" type="checkbox"/>	Full	Full	Full

#### D. GOODS ENTRY AND HEAT MANAGEMENT

The goods entry allows the user to create purchase orders and book the appropriate material automatically to the stock based on a goods receipt. For booking purposes, a distinction is made between types of business such as own production or external delivery. If the user sets up a new goods receipt, he has the possibility to insert all information of the heat, e. g. heat number, a barcode, a certification file, steel quality, bundle number etc.

A statistic about all open purchase orders with quantity and not yet booked goods receipts will inform the user about the current status.

After that the system prints the bundle tags and the tag will be added to the material (e. g. on the coil). Before the production starts the material will be registered by scanning the bundle tag. Then the operator can start the production and the produced bar marks will be assigned to the registered material.

The produced bar marks will be delivered together with the delivery note and certificate. Of course we have a special query where the user can search for specific heats or schedules if a customer, supplier or the government asks for a verification.

Order

Order Positions | List | Dokumente

P.O. No. 2813 Pos no. 1 Employee: 999999/LP

Product no. / Match BIV08W BIV08W BS1500S 08 mm WR

Order Info

Quantity 10.000,000 kg

Price 500,000 EUR / 1 to Amount (without discount) 5.000,000

Discount 0,000 % (with discount) 5.000,000

☒ Completed

New F2	Pos no	Product code	Product code	Match code	Quantity	Quantity unit	Price	Fact	P-Unit	Discount	Discount unit	Amount (without discount)	Amount (with discount)	C
Insert F3	1	BIV08W	BS1500S 08 mm WR	BIV08W	10.000,000	kg	500,000	1	to	0,000	%	5.000,000	5.000,000	<input checked="" type="checkbox"/>
Delete F4	2	BIV12WR	BS1500S 12 mm WR	BIV12WR	2.000,000	kg	450,000	1	to	0,000	%	900,000	900,000	<input type="checkbox"/>
	3	BIV10-18	BS1500S 10 mm WR	BIV10-18	3.000,000	kg	600,000	1	to	0,000	%	7.200,000	7.200,000	<input type="checkbox"/>
Undo F5														
Set Completed														
Open quantities														

Total weight[kg] 24.000,000 Total amount (without discount) 13.100,000 (with discount) 13.100,000

## E. ELECTRONIC DOCUMENT DISPLAY

This module covers the following functionalities:

- Send PDF files by mail from LP-SYSTEM
- Transfer of data in a standard format from L & P as a text file via FTP or Windows directory
- Transfer to archiving system with keyfile in a standard format from L & P (CSV or XML)

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#### F. LANGUAGE MODULE

The following documents can be printed in different languages:

- Tags
- Item list
- Delivery note
- Invoice

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#### G. CREDIT BALANCE WARNING

In addition to the functionality of the credit limit check, the credit balance warning also takes into account delivery notes that have not yet been billed or drawings/schedules that have been released for production but have not yet been delivered. This not only checks whether the customer has already exceeded his credit limit, but also whether the customer will exceed his credit limit when invoicing the open deliveries.

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#### H. GRAPHICAL PRINTOUT MESH OPTIMIZATION

This module makes it possible to print out a graphical cutting list for the offcuts of the mesh optimization, included in the basic module of LP-SYSTEM.

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#### I. IMPORT OF BVBS- AND EXCEL-FILES FROM CAD

The BVBS-Interface was programmed in cooperation with reputable CAD-manufacturers, machine manufacturers and LENNERTS & PARTNER GmbH.

With it, it is possible to transfer reinforcement data from CAD to LP-SYSTEM without the item data having to be entered again. This module is very popular in precast plants, as they receive almost all the materials from their own CAD department and therefore no longer need to capture them manually.

This signifies an enormous time saving in the production department! Also 3D bar marks can be imported.

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#### J. IMPORT AND EXPORT OF DRAWINGS/SCHEDULES TO OTHER SUBSIDIARIES

You can export the drawing/schedule from LP-SYSTEM and import it into another subsidiary. In this way, item data can be easily exchanged between two companies.



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#### K. CAPACITY PLANNING

With this module, you can have both a tabular and a graphical overview of the project capacities output in a certain period of time. You can enter the target value for the individual project for the relevant material in the relevant month in all target columns.

The program then calculates the remaining time and shows you the utilization in the graphic. Thus, you always have an idea of how much has already been delivered to the project and what is still open.

---

#### L. CREDIT LIMIT CHECK

This includes the verification of existing balances, which are imported from the accounting system, with the reliable balance deposited in LP-SYSTEM for the respective customer. If the admissible balance of the customer is exceeded, a warning message is issued.

We are happy to check for you if the accounting system allows the balances to be exported to LP-SYSTEM.

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#### M. DELIVERY CONTROL

After choosing a cargo all items within this cargo will be listed and can be scanned e. g. by a wireless scanner. The data is transmitted directly to the system and updated.

After finishing it there is a report available with all missing and all wrong loaded items. This list can be printed. So the operator always has a precise overview of what was loaded on which truck.

---

#### N. CUSTOM MESH MODULE

With the custom mesh module, you have the option to record custom mesh with shape, length and width. You can also specify whether the mesh is cut, bent, rolled, high-ductile or biaxial mesh. Accordingly, the surcharges will be calculated automatically and shown on the invoice.

Custom mesh

Price list 1389

Lima

Schedule No. AT-201.1 / A

Member 1 - --- 1 X

member wise

Bar Mark 4

Product code

Matchcode

Factor

Quantity 1

Quantity 2

Weight

Length

Width

Shape Code

☐ Cutting
 ☐ High ductility
 ☐ Diameter05

☐ Bending
 ☐ Sonderdyn

☐ Roll bending
 ☐ Feldsparmatte

☐ Zweischmatten
 ☐ Double wire

Prod. quantity

Job Position

Price /

Total value

Discount %

Bar Mark	Product description	Factor	Quantity1	Price	Total price	Length
3	Custom Mesh - 2 Axis 10-12 mm	1	55,74		0,000	4,000

Delete (F4)

## O. OFFLINE-DOWNLOADING BY USING PDF-BARCODES

In this form of machine downloading, a two-dimensional barcode (PDF barcode) in BVBS format is printed on the labels. No cabling to the machine is required (offline) as this barcode already contains all necessary data. It eliminates the input times on the machine and associated input errors.

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#### P. PRICE ADJUSTMENT CLAUSE

The module simplifies price adjustments. It enables an automatic recalculation of a delivered/invoiced quantity in a certain period of time.

This spares you a considerable effort to determine the necessary data for post-invoicing! Depending on the result, a credit note or invoice can be generated and printed on the basis of the values obtained.

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#### Q. STEEL TRADING

With this module, orders focused on the steel trading can be simplified and processed faster. Elaborate optimizations are eliminated in this area. The areas of rebar and steel trading can run side by side.

At the order level, all data required for order processing for a customer is entered:

- Customer address and delivery address
- Shipping information such as shipping method and additional information
- Terms of payment for the order
- Delivery date of the order

The display of document number and document date for delivery note, receipt and invoice contributes to the overview. This makes it easy to see which documents need to be printed for this order. In addition, information about the creation and processing of the order is displayed.

The data entry is supported by current stock data and statistics on the current item. The item data are compared with the order data. The stock data consists of current stock, available stock and reserved stock.

The „Price Info dialog“ provides information about the price history of a selected item and provides information about:

- Stock values such as reservation and availability
- History of the purchase prices in the stock movements
- History of sales prices in stock movements

The following printouts are possible:

- Work certificate with the list of all items
- Order confirmation
- Delivery note
- Document for the boss as proforma invoice
- Invoice

Stahlhandel

Price list 1027

Contract Positionen | List

Bar mark 1

Matchcode 018930

Product code 018930

Kind of turnover L\*Production - 1

Number 1

Quantity 20,000

Quantity 2 20,000

Weight 12,000

Price 20,00

Discount 0,00

Total price 400,00

Info test

KNIPLEX Rabitzzange 300 mm

Ku.-überzogen

018930

Prod. quantity 20,00

Bar mark Contract

Margin 400,00 749,06

Margin % 100,00 17,58

Weight 12 823

EK-Ez 0,000

Value purr 0,00 3.511,94

Value sale 400,00 4.261,00

Stock reserved available

0,000 St 0,000 0,000

Delete F4	Bar mark	Product description 1	MemberName	Factor	Quantity1	Price	Total price	Total weight
Allocate	1	KNIPLEX Rabitzzange 300 mm	L	1	20	20,00	400,00	12,00
Delete	2	Drehmomentenschlüssel 70275	L	1	15	20,00	300,00	0,30
	3	Abstandhalter DINKI	L	1	20	5,00	100,00	0,50
	6	Arbeitshandschuhe	L	1	20	5,00	100,00	
	7	Befestigungsblech 25 mm	L	1	20	19,00	361,00	15,00
	8	Matte N94V verzinkt	L	1	50	60,00	3.000,00	795,00

## R. STANDARD INTERFACE TO AN ACCOUNTING SYSTEM

This module can be used to connect LP-SYSTEM to an existing ERP-system in order to obtain all the data required for the creation of the delivery note and the invoice.

Also included in this module are the necessary interfaces for the import of product and customer data in LP-SYSTEM. For a precise definition of processes or adjustments, please contact us in advance.

---

#### S. FIXING

The fixing module allows complete projects in a fixing project to be invoiced accumulated or settled individually. Drawings for fixing can also be created manually from stock items.

All fixing weights can be changed again and stock items can be added. A fixing price list provides extensive billing options. Fixing credits are easy to create.

---

#### T. MODULE FOR REPRESENTATIVES

Each project can be assigned a representative included in the representative data. A representative statistic makes it possible at any time to determine the revenue and gross revenue assigned to the agent for a freely definable period of time.

A monthly overview for representatives finally gives information about all sales assigned for a month and their gross revenues.

---

#### U. INTERFACE TO A FINANCIAL BOOKKEEPING SYSTEM

This module includes the transfer of revenue data from LP SYSTEM to an external financial bookkeeping system.

This interface has proven to be very useful, because you have no work with the otherwise manual booking of invoices coming from LP-SYSTEM.

We contact the supplier of your financial bookkeeping system and obtain the interface descriptions. Once this interface has been programmed and tested by us, it can be used very quickly in your premises.

---

#### IV. TECHNICAL SOFTWARE (PRODUCTION PLANNING)

The production planning system makes it possible to allocate all the projects registered in LP-SYSTEM, their drawings/schedules and items optimally and automatically to the machines according to economic and technical criteria. It is freely definable how the user evaluates or correlates the economic and technical criteria.

Once the basic technical specifications of the machinery, the variously definable allocation options and priorities are recorded in the system, the production planning system automatically handles the allocation of the items to the right machines.

If a drawing/schedule has been released in LP-SYSTEM for processing, this drawing/schedule appears in LP-ProdPlan in the list of drawing/schedule that have not yet been produced. From these drawing/schedule, any production units can be created. For each production unit, the optimal allocation to the machines is then made. Manual re-allocation is possible at any time.

Each shape can be assigned to a specific machine if desired.

With the help of default values, it is possible to determine the production time. There are also activities such as change of bending head, removal times, etc. taken into account. A shift planning allows an accurate time planning of the production.

Statistics inform the user about the utilization of the machinery and the allocation of the items to the machines.

Once the production unit has been created, production lists and tags (including freely definable sorting order) can be printed. From this point on, all data is ready to be downloaded to the machines.

---

##### A. MAIN DATA

The main data is divided as follows:

- Machinery
- Production lines
- Priorities



Machinery

Description: **Stirrup Bender 1** Machine no. **66**

Short description: **StirrupB1** Type: **Stirrup bender # BB** Autom. feedback type:

1/ST-37 | 3/B500BT 4/BSI500S

☒ Use kind of steel?

Diameter mm	4	6	8	9	10	12	14	16	18	20	22	25	26	28	32	40	50	55
use ?	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N
bending ?	N	Y	Y	Y	Y	Y	N	N	N	N	N	N	N	N	N	N	N	N
Number steel t	0	2	2	2	2	1	0	0	0	0	0	0	0	0	0	0	0	0
Coil type		C	C	C	C	C												
maximum capa	0	300	320	350	400	420	0	0	0	0	0	0	0	0	0	0	0	0
No. bars/bundl	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MaxLeistung g	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Required staff: **1**

Maximum capacity (kg/h): **350**

Efficiency (%): **100,0**

Max. bundle weight:

Max. pieces/bundle:

Max. bundle height [mm]:

Number of depots:

☒ OnLineLink ☐ OffLineLink ☒ Barcode1D

☐ usable for 3D ☒ Printing tags

☒ Printing production list

Availability (%): **100** Time factor (%): **100,0**

Activity key: **Production**

Costs: **0,00** EUR/h

Scrap: **0,0** %

Additional price for material: **0,00** EUR/to

Depreciation: **0,00** EUR/h

Cast number management: **Automatically assigning**

Production hall: **Hall 1**

Sorting sequence: **112** ☐ Autom. bundle creation

☒ Able to be bent radially ☐ Only selected shapes allowed

Attributes

Additional

Shape

Bending pins

Sequence

Shapes

Open cast

Operator

Casts

☒ Barcode Production Unit ☒ Barcode Schedule ☒ Barcode delivery unit

☒ Barcode Production Unit / Diameter ☐ Barcode Schedule / Diameter ☐ Barcode delivery unit dia

☒ Barcode Production Unit straight / bent ☐ Barcode Schedule straight / bent ☐ Barcode delivery unit fix bent separate

Machine attributes Stirrup Bender 1/Stirrup bender # BB

1/ST-37|3/B500BT 4/BSI500S|

Diameter mm	4	6	8	9	10	12	14	16	18	20	22	25	26	28	32	40	50	55
Maximum total	9999	9999	9999	9999	9999	9999												
Maximum leg l	600	600	600	600	600	600												
Minimum leg le	4	4	4	4	4	4												
First minimum l	5	5	5	5	5	6												
Last minimum l	4	4	4	4	4	4												
Central min. le	8	8	8	8	8	10												
Central max. le	250	250	250	250	250	250												
First hook leng	5	5	5	5	5	5												
Last hook leng	5	5	5	5	5	5												
Bending diame	0	0	0	0	0	0												

Max. number of angles

Number of angles dual ...

Minimum number of pieces

Limit round up odd no. pieces

Time bending head change  s

Time diameter change  s

Time Coil change  s/Pos

Time adjustment  s/Pos

Speed EntryFix  cm/s

Speed EntryBending  cm/s

Speed bending  °/s

Time positioning  s/Pos

1 2 3 4 5 6 7

Max expansion (cm)

☒ Preferred bending upside

**Production line**

Production line Positions | Crane | List

ProdLineNo 74 Pos.\_no. 1

Machine no 52 Shearline1 ...

PosNo	Machine no	Short-Desc
1	52	Shearline1
2	53	DoubleB

New F2  
Insert F3  
Delete F4  
Undo F5

## B. PRODUCTION DATA

Menu:

- Production unit
- Machine allocation
- Feedback (manual)
- Production list / outgoing
- Production list by shape code
- Production list by diameter and shift
- Production list by machine

As many delivery units as needed with their steel, mesh and accessory items are combined to a single production unit.

Production unit

33 | 45

### Prod. unit

No. of prod. unit	Planned prod. star	Actual prod. start	Production finished	State
3779	20.08.2014	20.08.2014 - 10:5	20.08.2014 - 10:5	13
3780	08.10.2014	08.10.2014 - 14:0	08.10.2014 - 14:0	13
3781	04.11.2014	04.11.2014 - 15:2	04.11.2014 - 15:2	13
3782	12.11.2014	12.11.2014 - 11:1	12.11.2014 - 11:1	13
3783	12.02.2015	12.02.2015 - 15:3	12.02.2015 - 15:3	13
3784	19.02.2015	19.02.2015 - 14:3	19.02.2015 - 14:3	13
3785	20.05.2015			5
3786	18.06.2015			3
3787	24.08.2015			3
3788	08.09.2015			0
3789	08.09.2015			3
3790	25.09.2015	25.09.2015 - 10:2	25.09.2015 - 10:2	11
3791	04.03.2016			3
3792	04.03.2016			0
3793	04.03.2016			3
3794	04.04.2016			3
3795	06.04.2016			5
3796	28.06.2017			3

### Prod. unit delivery unit

Deliv. unit	Deliverydate	Cargo no	Project No.	Construction site	State
439	23.02.2015	6268	10011	Neubau Fabrikhalle 8	11
440	24.02.2015	6268	10011	Neubau Fabrikhalle 8	13
441	25.02.2015	6268	10011	Neubau Fabrikhalle 8	13
443	27.02.2015	6269	10011	Neubau Fabrikhalle 8	13
445	26.02.2015	6269	10011	Neubau Fabrikhalle 8	13
446	26.02.2015	6269	10011	Neubau Fabrikhalle 8	13
447	27.02.2015	6269	10011	Neubau Fabrikhalle 8	13

Deliv. unit	Order no.	Schedule	Sub Schedu	Member	State
439	102791	SW-206/A	1		11
439	102794	SW-203/A	1		13
440	102781	SW-216/A	1		13
440	102788	SW-209/A	1		13
440	102795	SW-202/A	1		13
440	102796	SW-201/A	1		13
441	102782	SW-215/A	1		13
443	102743	OB-201/B	1		13
443	102744	OB-202/C	1		13
445	102783	SW-214/A	1		13
445	102784	SW-213/A	1		13
445	102785	SW-212/A	1		13

Liefertermin ändern

Deliv.  Search load I.D.

Order no.   ☐ Delivery unit

Schedule  Project No.  No. of

☐ Show only own production units

Produktionssichten  
Standard

Production unit positions by

This production unit is regarded as one unit within the entire system

Within the production unit an automatic machine allocation as well as a bar cutting optimization takes place, and thus the production sequence is optimised.

All items of a production unit are released together for each machine at production. All schedules which are still to be produced are displayed for the creation of a production unit. Delivery units are marked in a dialog and assigned to the production unit.

There are numerous display options available to the user: each delivery unit is displayed in its item and weight proportion with regard to steel, mesh and accessories.

For each delivery unit all items (steel, mesh, accessories) can be displayed.

Items can also be re-allocated manually. For this purpose, the user is supported with an automatic search function. With this function it is possible to automatically mark items with certain criteria. The corresponding items are marked by the system. It is possible to select a machine to which the marked items will then be assigned. Depending on the system settings (parameters/system parameters), the bending machine is selected automatically or by the user in the case of a cutting and bending process. With the button "automatic machine allocation" the machine can be assigned to the marked items by the system.

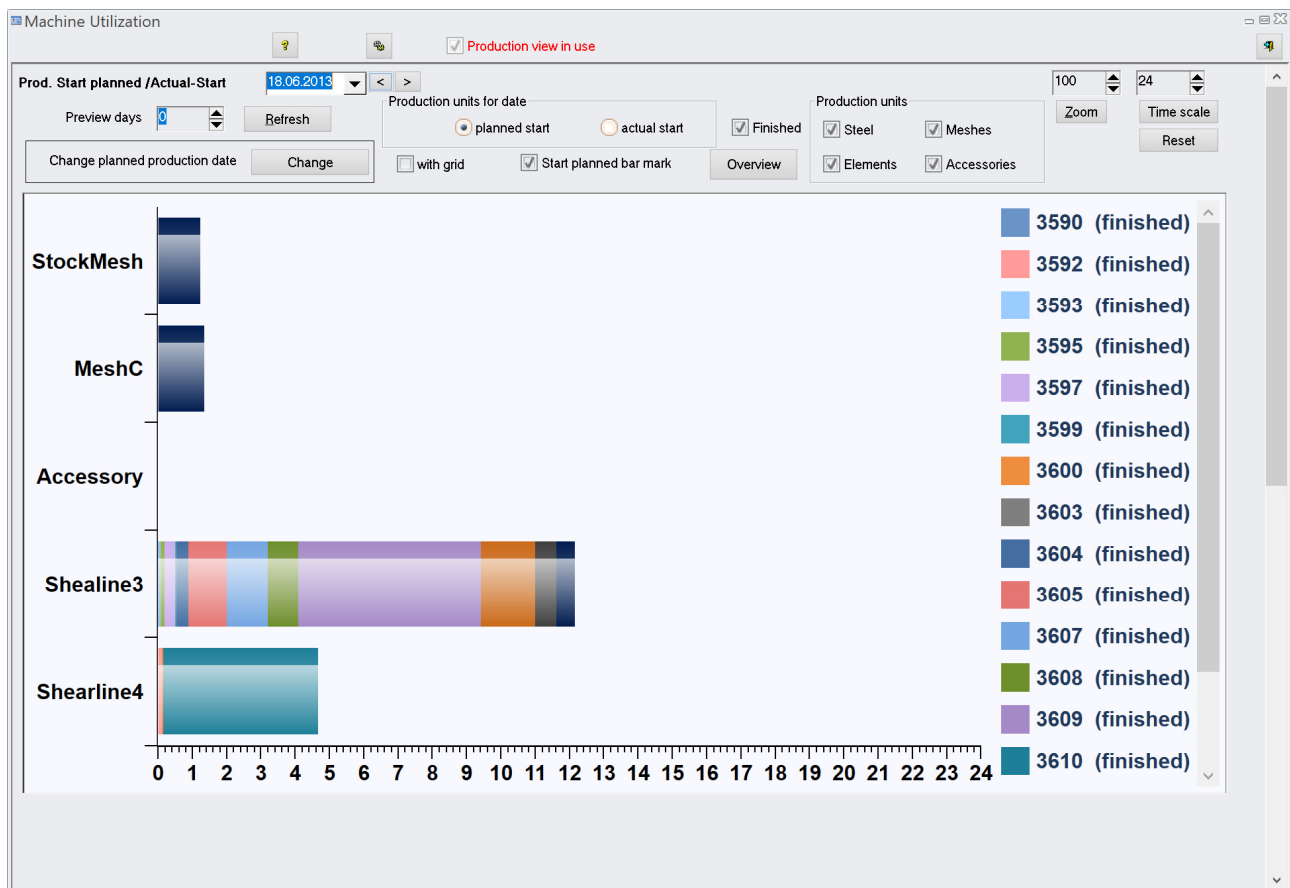
For bar cutting systems, an optimization can also be called up, which already provides information about the quality of scrap and offcuts during the production unit creation process. By modifying the selected drawings/schedules of a delivery unit and the re-optimizing process, the user can influence the result of the optimization.

As a result of this diverse information, the person concerned has the best possible overview of the current status of the production unit and can control the data (item data) as required.

As all important data is available immediately, the user is extremely well supported in the optimal planning of the production. All questions of importance are answered on the screen without delay. The person responsible can concentrate on the actual planning tasks and need not waste valuable time for researching.

### C. UTILIZATION

The menu item "utilization" makes it possible to monitor the utilization of the machines for a specific production date.



---

## D. MACHINES

All machines available in the rebar shop are depicted here exactly. Machine type (bar cutting system, stirrup bending machine, straightening and cutting machine, bending machine, etc.) and processing options are defined for each machine.

The types of processing 'cutting' and 'bending' per diameter are recorded, i. e. for each diameter is indicated whether the machine can cut and/or bend this diameter.

If 'cutting' is allowed for a certain diameter, the used material is entered, which makes a correct stock booking possible. For each machine further manufacturing criteria are defined, such as factors for the calculation of the production times, availability and so on.

Depending on the machine type, additional special data is recorded, such as

- available diameter of bending pin
- standard stock lengths
- bin system
- expansion of the machine (for testing the shape on stirrup bending devices)
- performance data (for the calculation of time standards)

The production sequence (schedule related, diameter related, shapes, length etc.) depends on the machine and is defined by the user for each individual machine. It can be changed at any time.

In this way the software can be adapted to the workflow of your rebar shop.

---

### Optimization Sequence

The automatic allocation for the machines happens during the preparation of the delivery units and/or during the entry of the barmark item lists.

When automatically allocating the machines, it is first of all verified whether there is a fixed machine standard for the shape of the item (see definition of shape codes). If this is the case, a test takes place, as to whether the item can be produced on the machine, on the basis of technical production restrictions (see machine data definitions). If the test result is positive, the item is allocated to the given machine.

Otherwise, each machine is tested in the sequence which is given on the priority list (see definition of priorities), as to whether it can produce the item, as long as no allocation could be made.



If a machine is found, a capacity test takes place according to the system configuration, i. e. if the machine is already too busy, the item is not allocated and the next machine of the priority list is checked. This capacity consideration is optional and can be turned off. Then the items are allocated to the machines independently of the present utilization.

If all items are allocated, an individual sequence optimization is performed for each machine, which assigns the items according to the efficiency principle. In this case the sequence defined by the user is adhered to (see definition of machine data).

Unnecessary and time consuming changes to the equipment of the machine (diameter, steel, bending pin etc.) are thus avoided.

Where a bar cutting system is concerned, an efficient bar cutting optimization is performed instead of a sequence optimization, which noticeably decreases the amount of scrap and offcuts and thus reduces production cost.

---

#### Priorities

For each possible type of processing (cutting, bending and cutting/bending), a separate list of priorities is managed per diameter, which determines the order in which the items should be allocated to the machines.

As additional criteria, minimum and maximum threshold values (length, number of pieces, weight) can be specified, which then influence the allocation. In this case, it is also possible to block certain machines for a processing type/diameter for the allocation, i. e. this machine will not be included in the automatic split of the items on machines (but is still available for manual assignments by the user).

The philosophy pursued in your rebar shop is so completely mapped in the system and is the basis for automation.

Priorities

PrioGroup 2 BSI500S Bend Steel to be bent

Steel no 4 BSI500S

Prodlino 81 CageSpiral

Diameter 12 ☐ blocked ☐ Default prod.line ☐ Only for 3D

Prio	Prodl	Description	Contents	blocked	Default prod.line	3D	Con.	Piece	Length (cm)	Weight (kg)	Nr. of bending	Pieces v.
1	81	CageSpiral	CageSpiral	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
2	72	StirrupB2	StirrupB2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
3	71	StirrupB1	StirrupB1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
4	73	StraightB	StraightB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
5	75	Shearline1+ManB1	Shearline1+ManB1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	and	21 ...	...	...	...	...
6	80	ShearB2	ShearB2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	and	...	4	...	...	...
7	79	ShearB1-C+ShearB1	ShearB1-C+ShearB1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	and	...	10	...	...	...
8	76	Shearline2+ManB2	Shearline2+ManB2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
9	77	Shearline2+ManB3	Shearline2+ManB3	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
10	78	Shearline2+RadiusB	Shearline2+RadiusB	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
11	83	Shearline1+ManB1+L	Shearline1+ManB1+L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	and	21 ...	...	...	...	...
12	87	ShearB1-C+ShearB1	ShearB1-C+ShearB1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	and	...	10	...	...	...
13	84	Shearline2+ManB2+L	Shearline2+ManB2+L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
14	85	Shearline2+ManB3+L	Shearline2+ManB3+L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
15	86	Shearline2+RadiusB+L	Shearline2+RadiusB+L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

New F2 Insert F3 Delete F4 Undo F5

Prio + Prio - Modify

## Stock Lengths

The lengths (freely definable) and diameters (6mm to ... 50mm) which are available as stock lengths can be specified, in dependence on available inventory lengths. Items, for which a suitable stock length is found, are then no longer allocated to a cutting machine, but are taken directly from the stock. These items are noted for each delivery unit on a separate production list "*stock lengths*".

## Printer Assignment

Along with the appearance of the printout, the printer which is to print each document can also be determined. Statistics and evaluations in the administrative office, the labels and production lists in the production halls - due to the variable printer allocation, the possibilities are endless and able to be altered at any time.



rejected. If desired, a certain channel may be determined, into which the bars that are to be bent can be filled. Otherwise bars which still are to be bent are handled in the same way as straight bars.

---

#### Freely Definable Machine Parameters

The user can e. g. define the maximum quantity of bars for each diameter, which can be inserted simultaneously. If performance drops down as a result of wear and tear of the shears, these values can naturally be adapted according to the circumstances.

To gain an overview of how long the production of items on a cutting list lasts, it is possible to consider specific times related to the machine (speed of conveyor...). Optionally, if and to what extent tolerances for straight bars and bars to be bent should be included in the optimization, can be stated.

Possible data for offcut lengths causes a breakdown of the cuttings into scrap and remnants i.e. the proportion of these appears in the statistics described at a later point, according to this information.

---

#### Settings of System Parameters

This issue represents the core of the optimization for the user. There is the opportunity by means of these settings to be made, to considerably influence the processing of the optimization. Alternatively, the user may choose depending on the previous production process, whether the items of the various schedules should be processed schedule-wise resp. diameter-wise. That is, whether a schedule which has already been begun, should be completed as quickly as possible or as the case may be, successively, for all items of a diameter (naturally from the point of view cutting optimization).

In addition to this, the user decides whether all items of a schedule should be filled in a bin, in order to consider the workflow of the optimization.

---

#### Additional Characteristics

Graduated lengths are handled differently to all other items during the optimization run. They are filled in one bin due to their low number of pieces, amongst other things.

When printing the cutting list, the user receives statistics about the used stock lengths (number of pieces per length and diameter), scrap and offcuts as well as the computed production times.

The application of bar optimization reduces personnel time at the machine (reduced input, manual optimization), so that with the same amount of work, a higher degree of machine utilization and productivity is attained. The result is that a higher tonnage is produced at lower production cost per ton.

Previous experience has shown that the application of bar optimization results in an increase of production for the bar cutting system (with machine downloading) by 30 - 40%.

---

#### B. ONLINE-DOWNLOADING OF THE MACHINES

The machine control system transfers the data from the production units within LP-ProdPlan to the machines after according request, i. e. by using a barcode scanning system at the machines.

Here, the data is transmitted by means of a cable (LAN) to the respective machine. The request of the data takes place by means of reading in or scanning a barcode which is located on the label or a barcode list.

It is possible to interrupt production at any time, prefer other items and then continue again later. Thus the sequence of production can still be freely defined.

Despite the machine is being downloaded, a flexible production is possible anyway. The input time at the machines disappears as well as the input errors involved.

Following machines have already been downloaded:

- Stirrup bender
- Bar cutting machines
- Straightening and cutting machines
- Straightening and cutting machines with bending
- Double bending machines
- Mesh welded machines
- Special machines – on request

---

#### C. AUTOMATIC DATA SUMMARY

The automatic data summary of data completes the solution for the rebar shop with online-downloading. This is understood as the automatic feedback of all produced items in the production.

The operator of the machine logs on at the machine when start working at the machine with an identification card, which has a barcode. All machines are asked about produced and completed items within short intervals.

This data is recorded in LP-ProdPlan and illustrated graphically on a bar chart. It is thus possible to receive a continuous, up-to-date overview about the progress of the production.

The automatic data summary registers WHO has produced WHICH ITEM WHEN AT WHAT TIME AND HOW LONG did it take and thus substantially increases the transparency of your production.

---

#### D. PRODUCTION PLANNING LIGHT

The light version contains only these functionalities

- Management of machines
- Management of production lines
- Management of priorities
- Automatic machine allocation

---

#### E. CENTRAL SCANNER-BASED FEEDBACK WITH BARCODES

With this module items can be feedbacked in LP-SYSTEM or LP-ProdPlan. Requirement for this is a strip on the label on which a barcode is printed.

This is for production control, i. e. after completion of the items the strip is teared off and the barcode on it is scanned and thus feedback took place. This is also possible via a WLAN scanner.

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## VI. PROCEDURE OF INSTALLATION

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### A. CRITERIA FOR SELECTION OF A MACHINE

The most important criteria a production planning has to take into account are, of course, within your discretion. That means that you can decide whether you accept the optimal solution as proposed by the system or if you want to establish priorities in certain parts of the production process.

You will receive from us a questionnaire that reflects the processing of your orders. Specific data are recorded for every machine:

- Technical data (sizes, performance data, etc.)
- Minimal and maximal threshold value (number of pieces, length, weight)
- Stock lengths
- Factory-specific bundles (number of items, length, weight)
- Special shapes (stirrups, etc.)
- Rings and spirals

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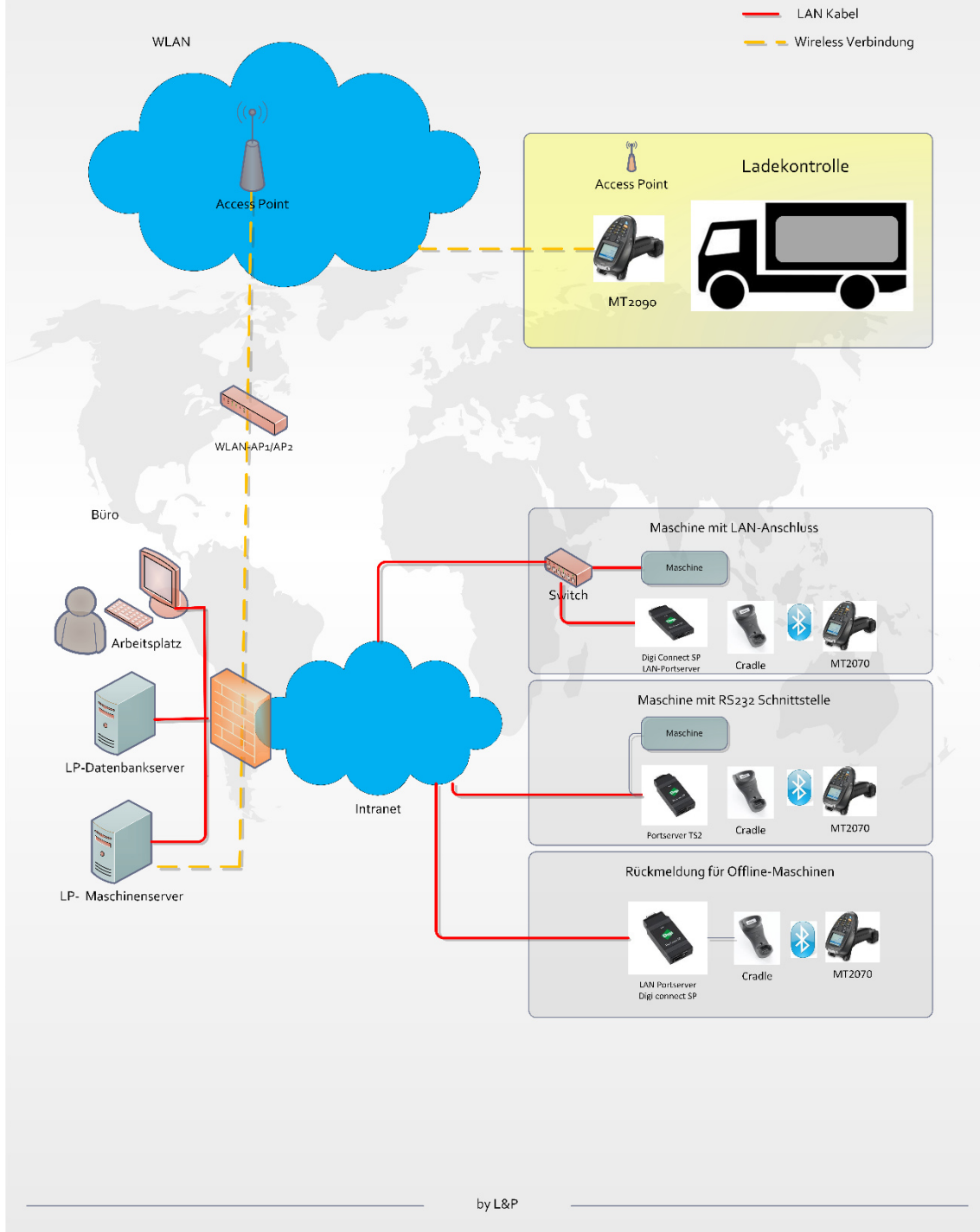
### B. CABLING

The connection between the machine control server and the machines is made via the local computer network or separate serial connections depending on local conditions and equipment of the machines. The installation of required cables and devices will be made by customer based upon agreement with LENNERTS & PARTNER.

The power supply for the equipment for the data summary is made, if possible by a connection to the power supply of the machine. Only in case the machine in question does not have a power supply the laying of an additional cable is necessary.

## LAN-WLAN Verkabelungsschema

17. März 2016





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#### C. BARCODE-HARDWARE

The barcode hardware (scanner, port server and various converters for each machine to be downloaded and all machines with production feedback) is recommended to be procured via LENNERTS & PARTNER. These are then sent pre-configured to the customer.

The cabling to the machines should be done by a local supplier due to the shorter response times.

---

#### D. SOFTWARE SERVICE AND MAINTENANCE CONTRACT

The software is constantly developed further in close co-operation with our clients and innovations are passed on as updates. The philosophy of our company is to achieve the highest possible degree of contentedness of our customers. Of course this makes the permanent contact with our clients necessary. Be it through visits of our external duty team, workshops, customer surveys or a short telephone call. **Our experience shows that not many software producers care that much for their customers after the installation!**

Two really important points are the Hotline and the **remote maintenance**. Under a special telephone number you can get support concerning your software issues. Our hotline staff members are not only experts for our software but also know the work processes in the rebar shops. More serious problems as they might turn up for example after a power failure are solved immediately **remote maintenance**. Through this we have the opportunity to locate possible software defects and to inform your hardware supplier about possible hardware defects in advance.

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## VII. SYSTEM REQUIREMENTS

State January 1st, 2018

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### A. FILESERVER

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#### Minimum requirements

- Intel Xeon Dual-Core, 4 GB RAM
- min. 80 GB free on hard disc
- Microsoft Windows Server 2012 R2 incl. Service packs
- Microsoft SQL Server 2014 R2 Standard Edition incl. Service packs  
Notice: the database is not part of the software package!
- Microsoft .NET-Framework 4.0 or higher
- For further server software corresponding additional memory is necessary

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#### Recommendation

- Intel Xeon Quad-Core, 8 GB RAM DDR3
- Redundant discs (RAID 1, RAID 10), SCSI or SAS
- 120 GB disc space or more (e. g. 2 x 36 GB + 2 x 72 GB)
- Network interface card 1 Gbit-System or faster
- CD-ROM-drive
- MS Windows Server 2016
- Microsoft SQL Server 2016 Standard Edition incl. Service packs  
Notice: the database is not part of the software package!
- Microsoft .NET-Framework 4.0 oder höher
- Backup software, possibly with SQL-Agent
- For further server software corresponding additional memory is necessary

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### B. TERMINAL SERVER

According to the functionality of the new windows server operating systems (the terminal services of Windows Server or CITRIX) it is worth to consider to implement such an environment, especially if you have older workstations which are powerful enough for the daily work but not for the new solution. Moreover this solution is often used, because of the easy way to centrally administer the network, the software and the security.

So, if you intend to set in terminal services please discuss this solution with your local system solution provider.

Due to performance and security reasons always a separate server should be used for the terminal server. Only if there are not so many users (up to approx. 5 users) a shared server would be a possible solution. However, here the standard security settings for the directories would have to be adapted restrictively.

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#### Recommendation for a separate server:

- Intel Xeon Quad-Core, min. 8GB RAM
- Mirrored hard disks, approx. 72 GB
- Network interface card
- MS Windows 2012 R2 or Citrix Metaframe

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### C. PRINTER

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#### Minimum requirements

- 1 unit, with suitable windows driver
- Connected tot he network (e. g. on fileserver, print server)

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#### Recommendation

- 2 units, with suitable windows driver
- Laser printers with more trays can be used
- Connected tot he network (e. g. on fileserver, print server)

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### D. WORKSTATION

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#### Minimum requirements

- Intel Xeon 2GHz, 1 GB RAM
- Graphic card with a resolution of min. 1024 x 768 pixels
- Mouse
- Microsoft Windows 7 Professional
- Microsoft .NET-Framework 4.0 or higher
- Connected to the network
- For further software additional memory has to be considered and our technical stuff first.

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#### Recommendation

- Intel Core i5, 3 GHz, 3 GB RAM
- 19" TFT display
- Network interface card 1 Gbit-System or faster
- Mouse
- Graphic card with a resolution of min. 1280 x 1024 pixels
- Microsoft Windows 10 Professional
- Microsoft .NET-Framework 4.0 or higher
- Connected to the network
- For further software additional memory has to be considered and our technical stuff first.

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#### E. MACHINE CONTROL SERVER (ONLY FOR ONLINE DOWNLOADING)

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##### Recommendation

- Like workstation, but additional
- 19" colour monitor
- Serial ports after consultation with LENNERTS & PARTNER
- Remote access to the PC-console via RDP or similar

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#### F. MODEM

- IP-router or
- Dial-in via RRAS resp. RAS on Windows server resp. workstation or
- VPN-connection via Microsoft client
- Remote desktop access on server
- Or Teamviewer v.11

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## G. UPS

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### Recommendation

- Online-work or interactive-UPS
  - 1000 VA
  - Use for fileserver, printer, operation-PC
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### Alternative

- Online-work or interactive-UPS
- 3000 VA oder stärker
- Management software
- Use for complete computer equipment

For new providing or completing the recommended hardware should be taken as basis.

If other software products should be used on the computer so corresponding extensions according to their information have to be considered.

We would like to point out that it would be meaningful to have a certain inventory of replacement hardware in stock, in order to counteract possible breakdowns (e. g. defects, theft).

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