

PROWAY

BUSINESS WORLD



Member of **BVL⁷**

WAREHOUSE MANAGEMENT SYSTEM HIGHLIGHTS

storage occupancy WMID

filter: WH area: aisle location type: load class: loc. type:

storage allocation area / aisle / type / load class	storage allocation hazardous goods	WH area	# cells	total	empty	occupied	reserved	lock
1000 - DC Shuttlepart	ATK - fast mover	60	60	60	0	0	0	0
1000 - DC Shuttlepart	BLO - bulk storage inside	412	240.340	240.198	142			
1000 - DC Shuttlepart	B50 - bulk storage south-east	24	258.952	258.854	88			
1000 - DC Shuttlepart	HRL - vichualling warehouse	4.838	17.377	17.287	90			
1000 - DC Shuttlepart	KOPE - KOPE	10	30	38				
1000 - DC Shuttlepart	KTL - small parts warehouse	248	248	25				
1000 - DC Shuttlepart	LOK - long goods cardiever ...	470	470	237				
1000 - DC Shuttlepart	PLK - pallet long goods pick...	563	563					
1000 - DC Shuttlepart	PLV - pallet long goods stor...	898	898					
1000 - DC Shuttlepart	QS	10						
1000 - DC Shuttlepart	SHL - Löffelhaut Shuttle	9.416						
1000 - DC Shuttlepart	TBL - tray storage system	3.834						
1000 - DC Shuttlepart	Y001 - dispatch area fit							
1000 - DC Shuttlepart	WE18 - main goods receipt (...)							



THE STANDARD
FLEXIBLE. INDIVIDUAL.
FUTURE-PROOF.

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WAREHOUSE MANAGEMENT

FLEXIBLE. INDIVIDUAL. FUTURE-PROOF.

Proway Business World puts you in the position to make your value chain efficient, precise and fast. This ensures a continuous improvement of quality, customer satisfaction and sales.

PROWAY BUSINESS WORLD

Organization, control, analysis and optimization of the flow of goods and logistics - worldwide. Suitable for any warehouse regardless of industry.

The heart of every logistics facility is the software which makes sure that all areas, transports, and processes interact smoothly with each other. With PBW software, all flows of goods and information alongside the intra logistics supply chain can be organized, steered, displayed and analyzed – even beyond various logistics facilities.

The Proway warehouse logistics solution PBW is multifunctional and structured in a modular fashion throughout. Therefore, it is suited for all manual, half, or fully automatic intra logistics supply chain facilities, all the way up to high performance logistics facilities. PROWAY BUSINESS WORLD can be adjusted to new requirements or extended features at any time so it can keep pace with the continuing development of your business or with its cycles and processes.

An essential distinguishing feature of PBW is the high level of configurability and the related adaptability. If your processes or facilities change, these changes/innovations can be implemented directly in the system without any problems or major effort. PBW works strictly with key values, which can be changed by the user. This enables the customer to adapt the system perfectly to the needs of the company. During the development of PBW, attention was consistently paid to high configurability in order to create a powerful tool - a standard product that can be almost completely individualized.

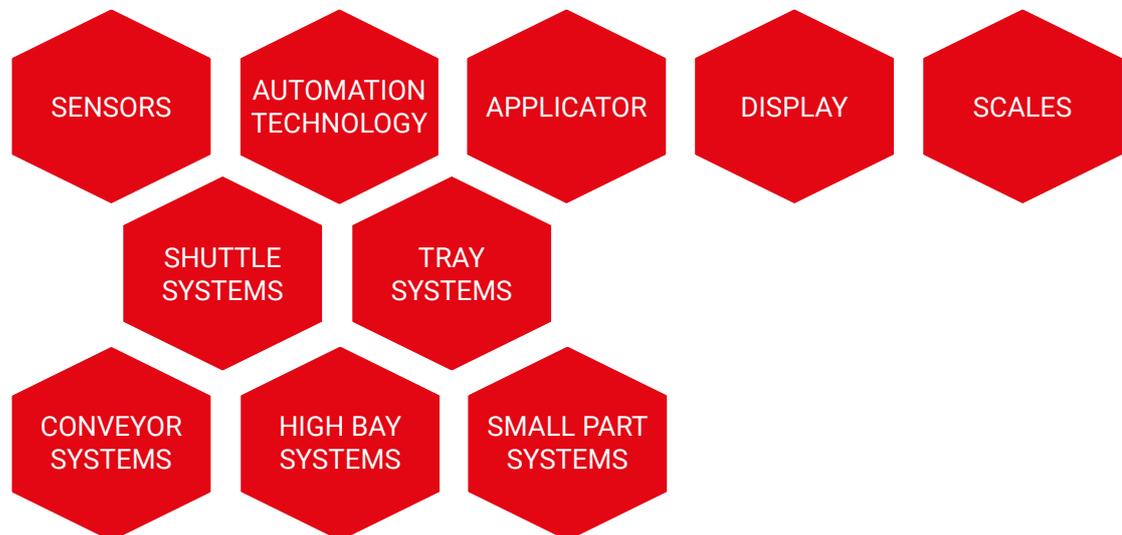
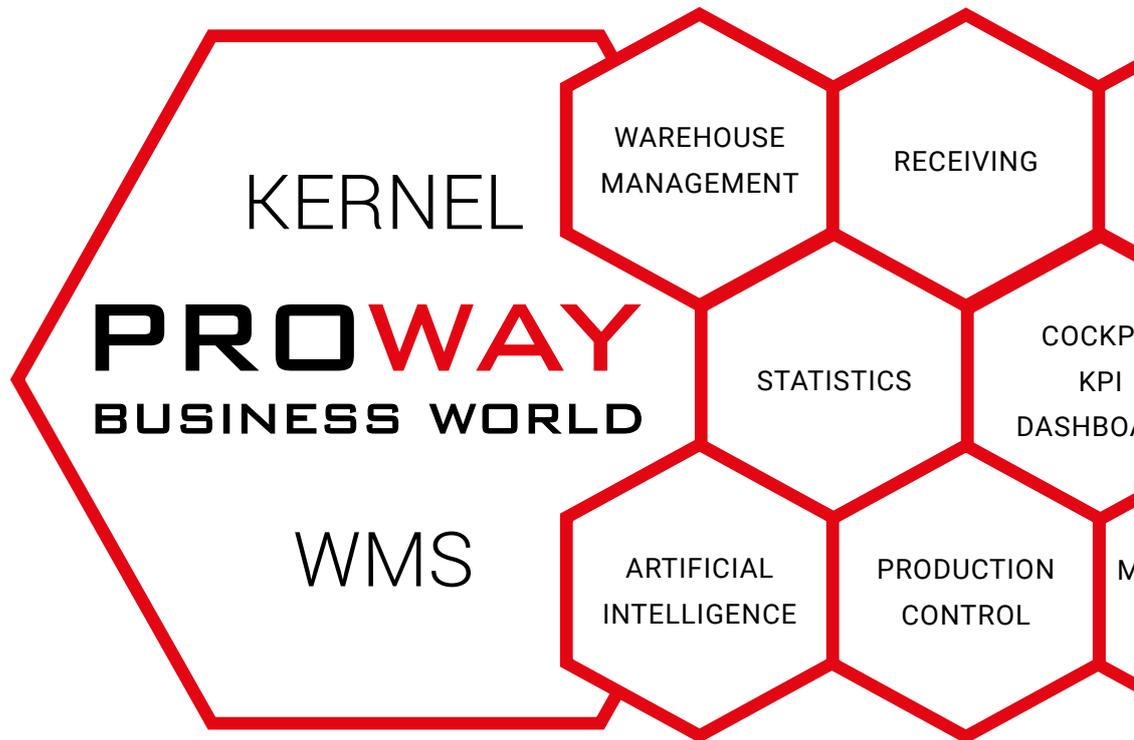
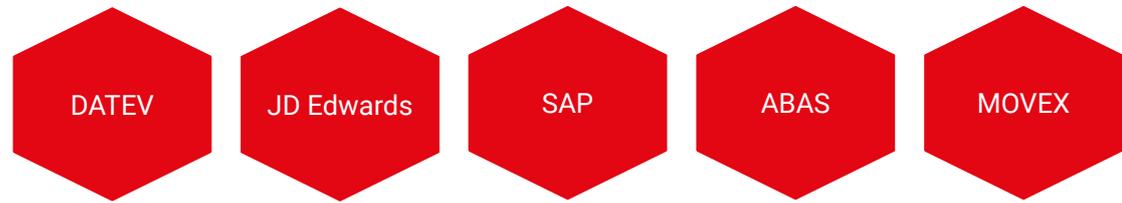
Because of its modular and integrative structure, PBW can be used in projects according to the requirements and it allows an efficient distribution of functions. This brings along excellent possibilities for testing and it offers a transparent documentation. The functional separation enables the staff to work in parallel with the software without influencing each

other's work and provides a high performance within the PROWAY BUSINESS WORLD software. The software allows warehouse management and material flow controller (MFC) to be executed within the same data base. That way, costs for server and licenses can be minimized.

Due to the integration of warehouse management and material flow computer within PBW, no separate interface is required between the warehouse management system and the material flow control. The dialogues of the various modules for warehouse management and transport control are integrated for the user in a single application. Interfaces to external systems such as SAP, scales, subordinate control systems - are already available as standard or can be implemented project-specifically in a way that existing systems and architectures do not have to be adapted.

PBW is preferred available within the MS SQL Server landscape. The preferred operating system is Microsoft Windows Server. The application is based on a native Microsoft Windows client and is also available as a web application for various browsers. Centralized management allows software updates to be imported without major administrative costs. A comprehensive online user manual, which can be downloaded directly from the application rounds off the user concept and offers the operator the best possible support.

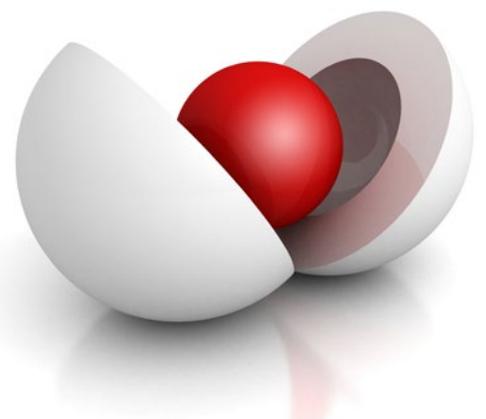
MODULAR DESIGN





SOFTWARE KERNEL

The basis of PBW is the kernel, which is the platform for all other modules and functions. All modules rely on this basic functionality.



USABILITY & USERMANAGEMENT

Dialogue-based and interactive customizations allow quick and efficient adjustments to the system.

USER INTERFACE

The intuitive user interface had been developed largely with known and common user interfaces in mind and offers therefore a quick and safe skill training of the user. For the daily operation we paid attention to a meaningful and user friendly usability, which enables efficient working.

The basis of the overview dialogs is a standardized, tabular overview. For individual adjustments of those overviews, the user has a multitude of filter and sorting options available. Additionally, PBW offers selective Export and Print functions of certain tables to MS Excel.

Each user can individually adjust the filters, the layout, and the font sizes of the tables and save these changes at the individual work station. Furthermore, these adjustments can be rolled back at any time and the factory settings will be applied.

The masks can be adjusted to customer-specific requirements. Field names can be changed by the administrator and fields can be placed individually.



USER & AUTHORIZATION MANAGEMENT

PROWAY BUSINESS WORLD is subject to an entitlement concept in which the resources, functions, and information cannot be used in an unrestricted way. User roles are collections of entitlements like e.g. reading rights for tables or execution rights for functions, which can be allocated to the users by a certain group membership.

The ability to independently group certain "roles" allows for the setting of different entitlements for discrete work spaces and individual users. In addition to the above mentioned user entitlements are also work station entitlements with which an allocation of dialogs to certain work stations can be accomplished.

MATERIAL MASTER DATA

The Material Master Data Administration in PROWAY BUSINESS WORLD contains all logistical base data for a product. PBW achieves a maximum data quality for the product in relation to the logistic scope of work.

MATERIAL MASTER DATA ADMINISTRATION

It differentiates by the means of origin and the usage between external and internal Material Master and groups the Material Master into the areas

- ▶ basic data
- ▶ location and plant
- ▶ quantity units
- ▶ supplies
- ▶ fixed bin location
- ▶ hazardous substances and dangerous goods management
- ▶ access statistics
- ▶ package management
- ▶ customer-specific information (additional to materials)

The screenshot shows the 'change material master MAT02' window in the PROWAY BUSINESS WORLD software. The window is divided into several sections:

- Header:** Material no. PW001, material desc. TV, Internal material master.
- Navigation:** Overview, basic data, material & additional texts, site and plant parameters, units, replenishment and assigned locations, other data, hazardous good warehouse, hazardous good street, access statistics.
- Basic Data:**
 - base unit: STK - STK - piece, EAN: 3389110844665, ERP material no., PBW materi.: PW001
 - order unit: STK - STK - piece, gross weight: 20,000 kg, net weight: 10,000 kg, batch obliga.
 - length x width x h: 5,000 x 100,000 x 80,000 mm, volume: 0,050 m³, size
 - material type: ROH - raw material, product group, assortment, ext. material: Computerisch
 - hazardous mater., dangerous substance., VCI class, drawing no.: ASDFAF
 - standard descripti.: TEST, manufacturer part no.: PRODD33, room conditions, drawing rel.
 - overall durability, period indicator BBD, temperature con., material gra.
 - min. residual mat., rounding rule, certificate obligat., deletion flag.
- Logistic Data:**
 - ABC class: C - slow mover, qty. for remaining check: 0,000 STK, add. stock permitted
 - XYZ: Y - normal consumption, handling type, mixed LC
 - packaging group: VERP - packing material, BJ_multchmdfl
 - colour: , product photo: PW001_FERNSEHER.JPG, single stock no.
 - HJ base unit
 - user update: JMATSTAT, date update: 01.11.2019 23:59:03
 - created by user: init, creation date: 01.04.2013 00:00:00

Fig. 2: material master data: basic data

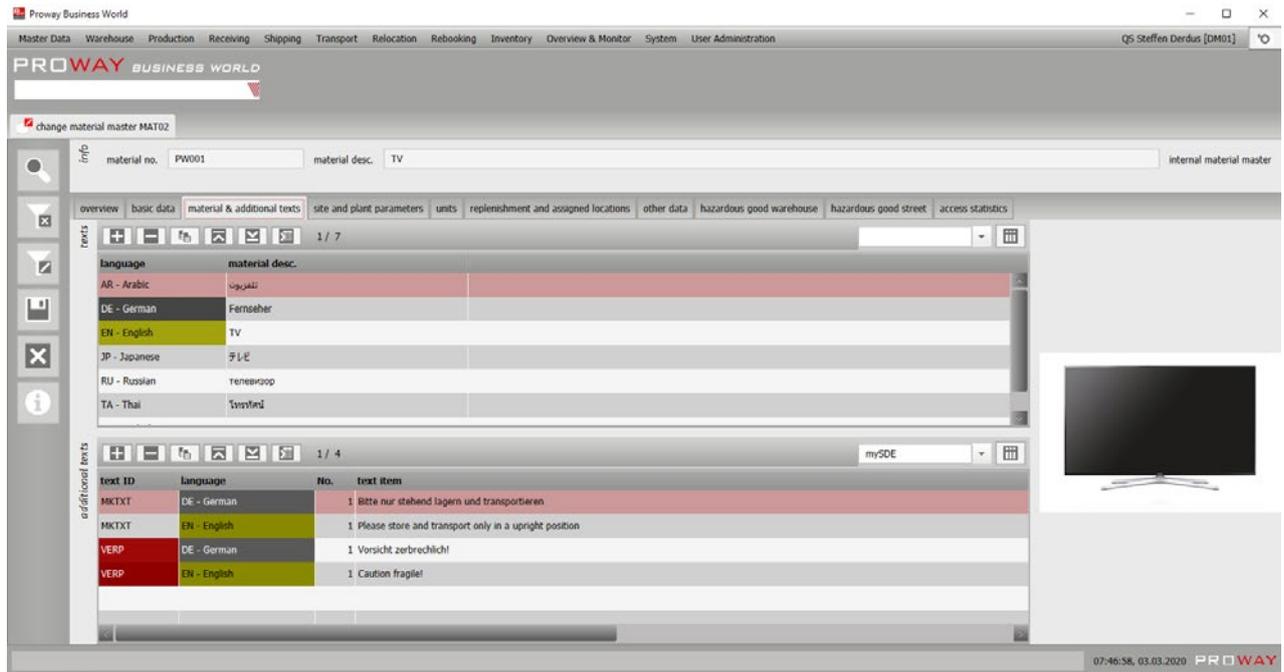


Fig. 3: material master data: additional texts and photo management

ABSTRACT PARAMETERS

BASIC DATA

material number
 material text
 material pictures
 reference texts
 EAN
 base unit
 sales unit
 weights (net /gross)
 measurements
 volumes
 branch of materials
 product group
 assortment
 material type
 raw material
 storage conditions
 temperature
 VCI classes
 hazard classes
 standard designation
 certificate handling
 drawing number
 management of text
 information for the material
 ...

SUPPLIES

site
 warehouse area
 minimum quantity
 maximum quantity
 ...

SITE AND PLANT

storage strategy
 retrieval strategy
 batch compliance
 ERP plants
 quality obligation
 serial number profile
 procurement types
 ...

UNITS

different units per
 material
 EAN per unit
 measurements per unit
 volume per unit
 weight per unit
 subordinated units
 ...

FIXED PLACEMENT

owner
 site
 warehouse area
 aisle
 shelf
 location
 ...

WAREHOUSE STRUCTURE MANAGEMENT

The warehouse structure management in PROWAY BUSINESS WORLD includes all physical and logical basic warehouse structure data for a warehouse complex.

With flexible location assignment it is possible to store different load carriers in the same area, automatically managed by PBW.

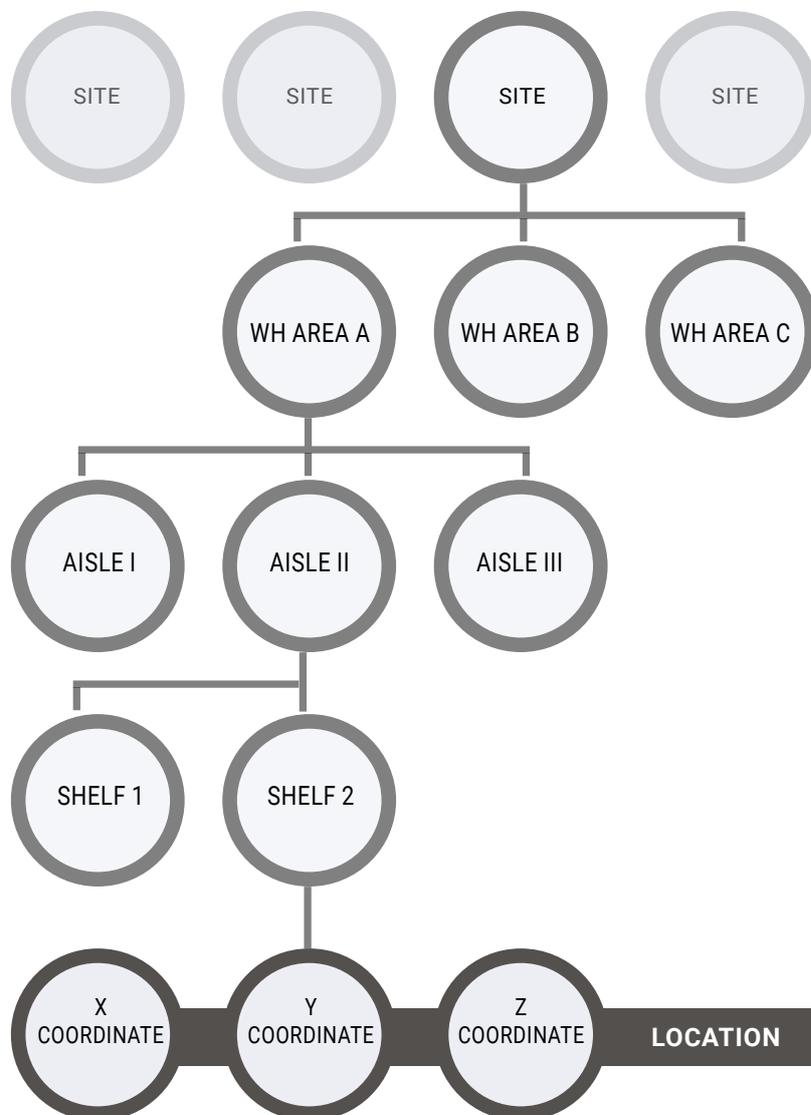


Fig. 4: warehouse structure



Fig. 5: stock Identification

STOCK MANAGEMENT

The PBW stock management handles storage units (pallets, containers, etc.), stocks (item quantities) and locations in the warehouse so that at each time it is exactly known which items are stored on which location in the warehouse.

The stock can be viewed on the following levels:

- ▶ logistics site
- ▶ warehouse area
- ▶ location

Grouping can be made according to:

- ▶ owner
- ▶ batch
- ▶ serial numbers
- ▶ best before date

CAPACITY CONTROL

The PROWAY BUSINESS WORLD capacity control is the basis for logistical planning, according to which the reference value (location classes) to each of the realizable capacity of the storage bins and storage equipment are determined.

1. OPTIMAL STORAGE SPACE-USAGE
2. HIGH STORAGE-UTILIZATION
3. CONSIDERATION OF TECHNICAL-CONSTRAINTS
 - ▶ Load capacity
 - volume
 - weight
 - bay load

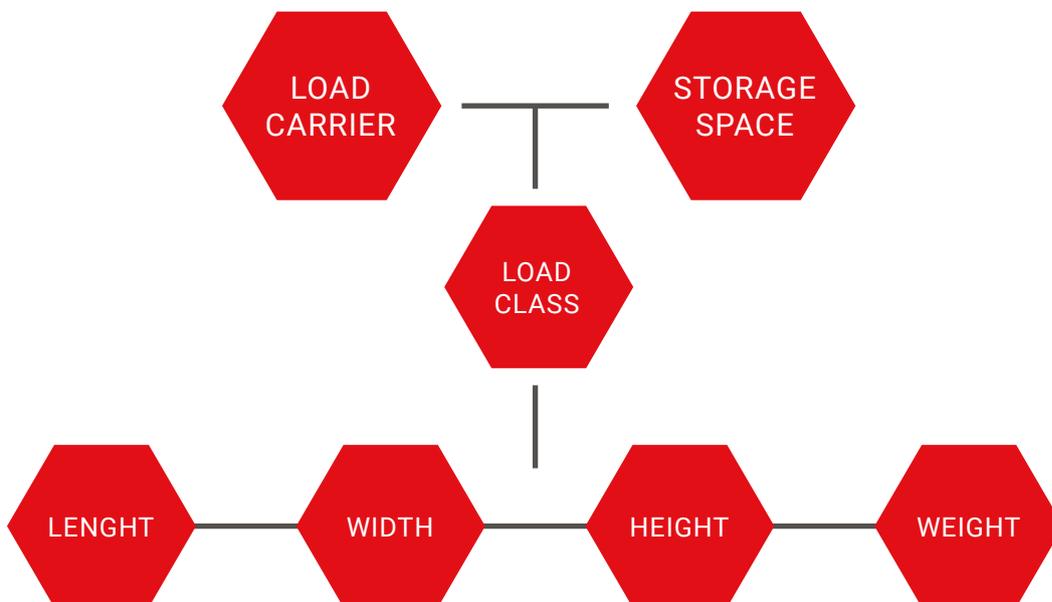


Fig. 6: load classes



Fig. 7: load class box

Load carrier types define among other things:

- ▶ the dimensions of the load carrier
- ▶ the tare weight
- ▶ the maximum permitted weight

Load classes define among other things:

- ▶ the dimensions of the load carrier including the material
- ▶ the dimensions of the storage location
- ▶ the maximum permitted weight

These assignments control the storage location search.



Fig. 8: storage space

TRANSPORT CONTROL

The transport control in PBW is responsible for executing all pending material movements in optimal order, so usually as fast as possible and with as few transport steps (transports) as possible.

To enable PBW to solve this complex task, various strategies are defined in the transport control system and the complete route network of the warehouse is mapped. This ensures that the most optimal / efficient transport route can be determined.

The cross-system transport control takes account into both, manual stacker transports for different types of storage and retrieval machines, various picking equipment, as well as fully automatic conveyor systems and stacker cranes are supported.

For each device, the resource classes can be used to determine whether it has one or more load carrier attachments and what the maximum load capacity is.



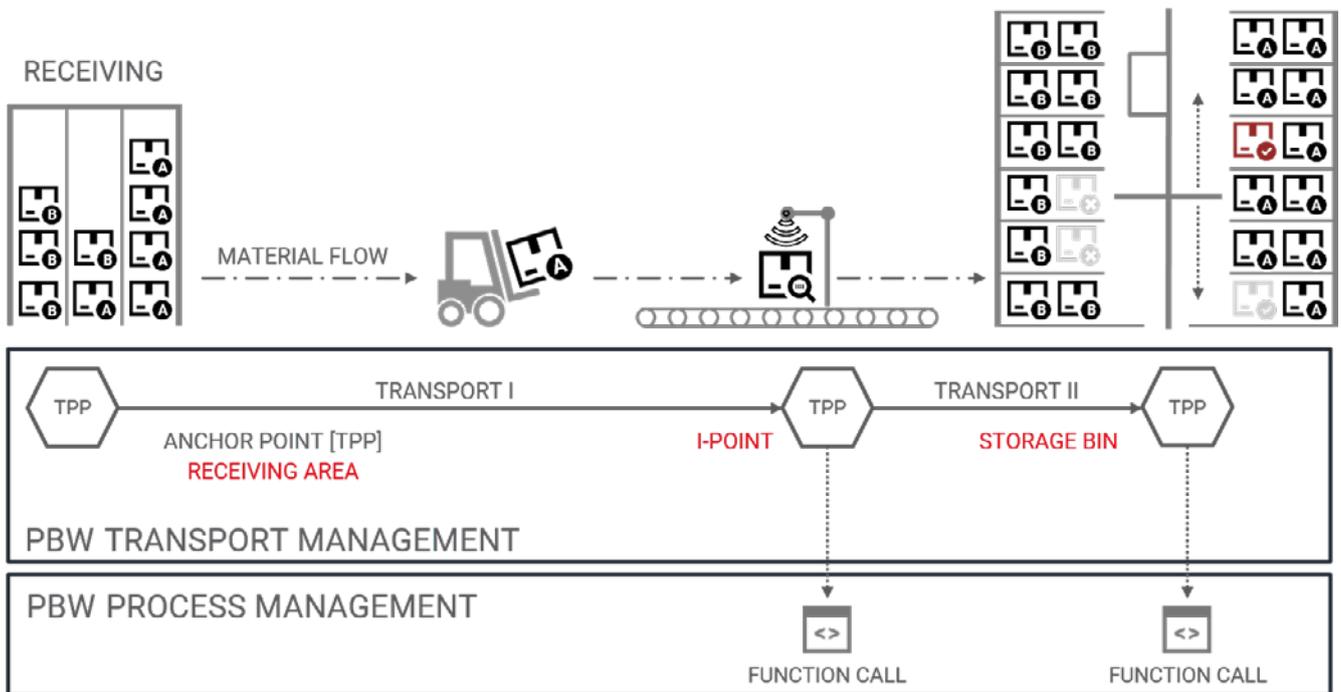


Fig. 9: transport control



PROCESS CONTROL

The task of process control is to interlink process flows, monitor the processing and, if necessary, to take control action. PBW controls the individual process steps via modifiable process plans and verifies the processing and consideration of dependencies (e.g. order types).

PROCESS LINKAGE

The chaining of processes is fully configurable and thus, perfectly adaptable to the needs of your business

- ▶ at the end of a transport
- ▶ after completion of a function
- ▶ upon completion of a dialog step





GOODS RECEIPT

PBW controls all activities for processing the goods receipt from the notification to the actual storage in optimal storage bins.



SHIPPING

with optional connection to ERP systems.

via interface | manually by PBW

customer management | forwarder management | order type management | route planning | assignment of: process plan, priorities, routes, shipping methods, forwarder, customer, time slots | loading zones | scheduling | cancellation | header- / item texts | ...

pre-reservations | stock reservations | cancellations | warehouse area strategy | location strategy | retrieval check rules | batch management | expiry date | special stock | stock category | packaging hierarchy | full pallet picking | partial picking | picking areas | replenishment | ...

manually | automatically | allocation of mobile devices | allocation of work station

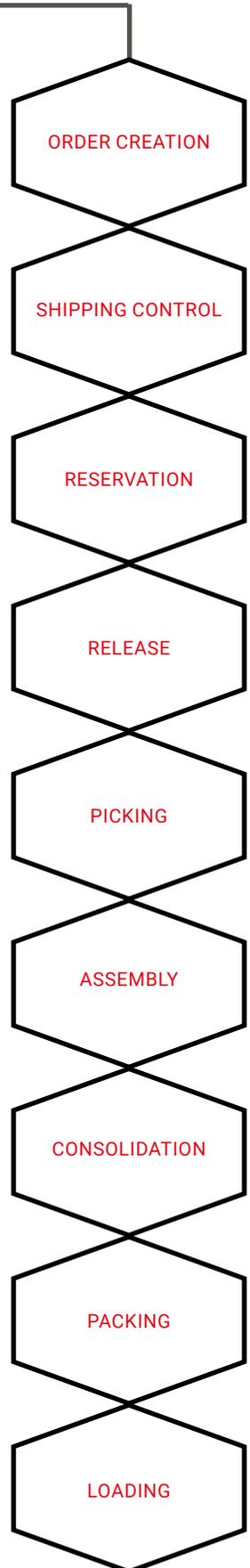
by list | by mobile device | in automated warehouses | pick by light | pick to light | pick by voice | pick und pack | optimized routes | variable check criteria | shortage management | two stage picking | picking buffers | high speed buffers | negative picking | ...

rods | sections of sheet | handling of reference | texts | customer services | consolidation | kitting | finishing | bill of materials | additional services: banding, stretching, labelling, can be expanded | ...

by order | by tour | by tour groups | per loading zone

packing station | packing instructions | forming packing unit | SSCC label | missing quantity | repacking | packing list | mobile devices | weighing machines | planning of packing | packing process in % | cancelation after packing | hazardous goods management | ..

by list | by mobile devices | dock management | printing of: delivery note, bill of landing, dangerous goods advice | photo manager | license plates | recessions non-loadable material | ...



PROCESS COST ACCOUNTING

PBW determines your costs within the logistics and maps each sub-process precisely. In this way, potential savings can be identified in real time and processes can be optimized.

Activity-based costing is an approach that enables you to better plan and control the costs of the business areas and allocate them to products or services. In this process, orientation is based on the value-added chain by referring to the individual company processes.

The tasks processed in the company's cost centers are broken down into process-related activities. The costs are assigned to these activities, depending on cost drivers, and process cost rates are determined from them. The process cost rates are used to calculate the process-related overhead costs for the products or services, which can then be invoiced to the service recipient or used to optimize internal processes.

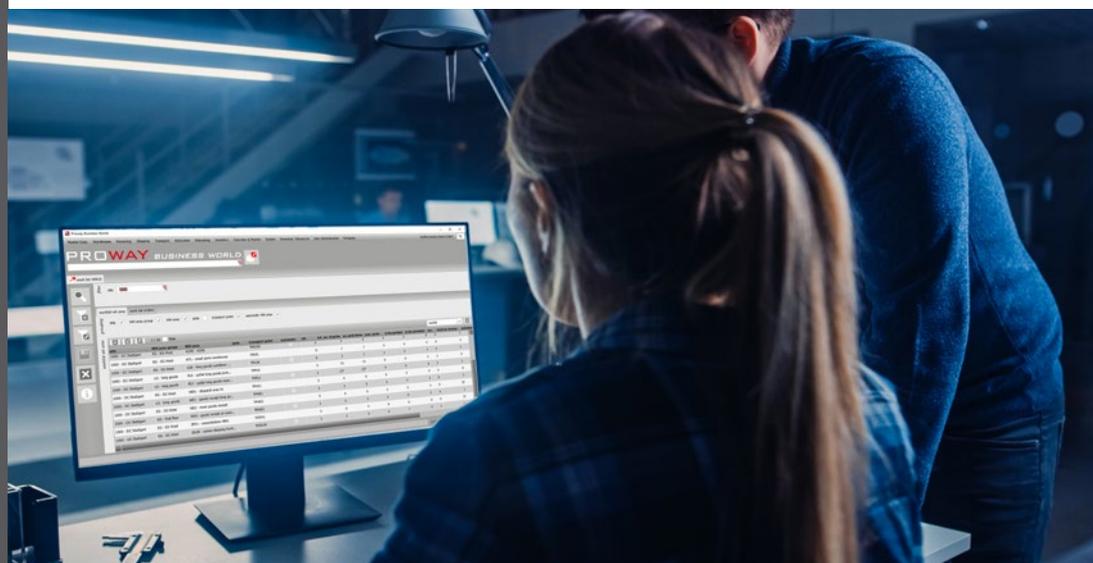
REVOLUTION IN THE LOGISTICS CONTROL STATION

PBW can perform all control station tasks for you in a fully automatic way, from the planning of the orders to the stock reservation of the materials and finally to the release of the picking orders.

Check rules are used to define exactly those criteria that were previously the basis for your employees' decisions. For all these schedules, reservations and releases of the shipping orders to be processed.

And should a new criterion be needed, it can be added with a few clicks and assigned to an existing or new rule.

The control is done quite simply in a dialog with assignment of the rules to working days and delivery times.





PROWAY BUSINESS WORLD

system settings SY501

workstation key tables warehouse management incoming goods goods issue replenishment transport management production control site / owner texts,units & number ranges reports LC types / load classes loc. templates location variants

- 1 status location
- 2 status LC
- 3 status SID
- 4 GR order status (WEK)
- 5 GR order item status (WEK)
- 6 GI order status (AUFK)
- 7 GI order item status (AUFP)
- 8 picking status
- 9 status SSID
- 10 status inventory
- 11 status transport order
- 12 status transport point
- 13 status aisle
- 14 status journal
- 15 status loading zone
- 16 status user

key va.	description	language	colour	date update	user update
00	empty	EN - English		11.07.2019 18:45:32	PWDBA
01	reserved on single location	EN - English		11.07.2019 18:45:32	PWDBA
02	partially occupied block location	EN - English		11.07.2019 18:45:09	PWDBA
03	completely occupied or block space completely reserved	EN - English		11.07.2019 18:45:09	PWDBA
20	blocked for relocation for multiple-depth location	EN - English		22.06.2017 16:41:27	
89	technical lock	EN - English		11.07.2019 18:43:35	PWDBA
90	error bin filled	EN - English		11.07.2019 18:45:09	PWDBA
91	error bin empty	EN - English		11.07.2019 18:43:35	PWDBA
95	LC was notified on another location	EN - English		20.12.2017 09:37:56	AB
NA	location does not exist	EN - English		22.06.2017 16:41:27	
XX	not usable flex-location	EN - English		20.12.2017 09:37:56	AB
ZZ	configuration of flexible assignments for several X- or Y-coordinates	EN - English			

PRODUCTION

PBW can also manage your production. The exact time required to supply individual workstations up to complex production lines is based on the resolution of bills of materials and the processing of warehouse and stock transfer orders.

What had previously to be designed in complex tables and connections can now be realized with PBW in just a few steps.

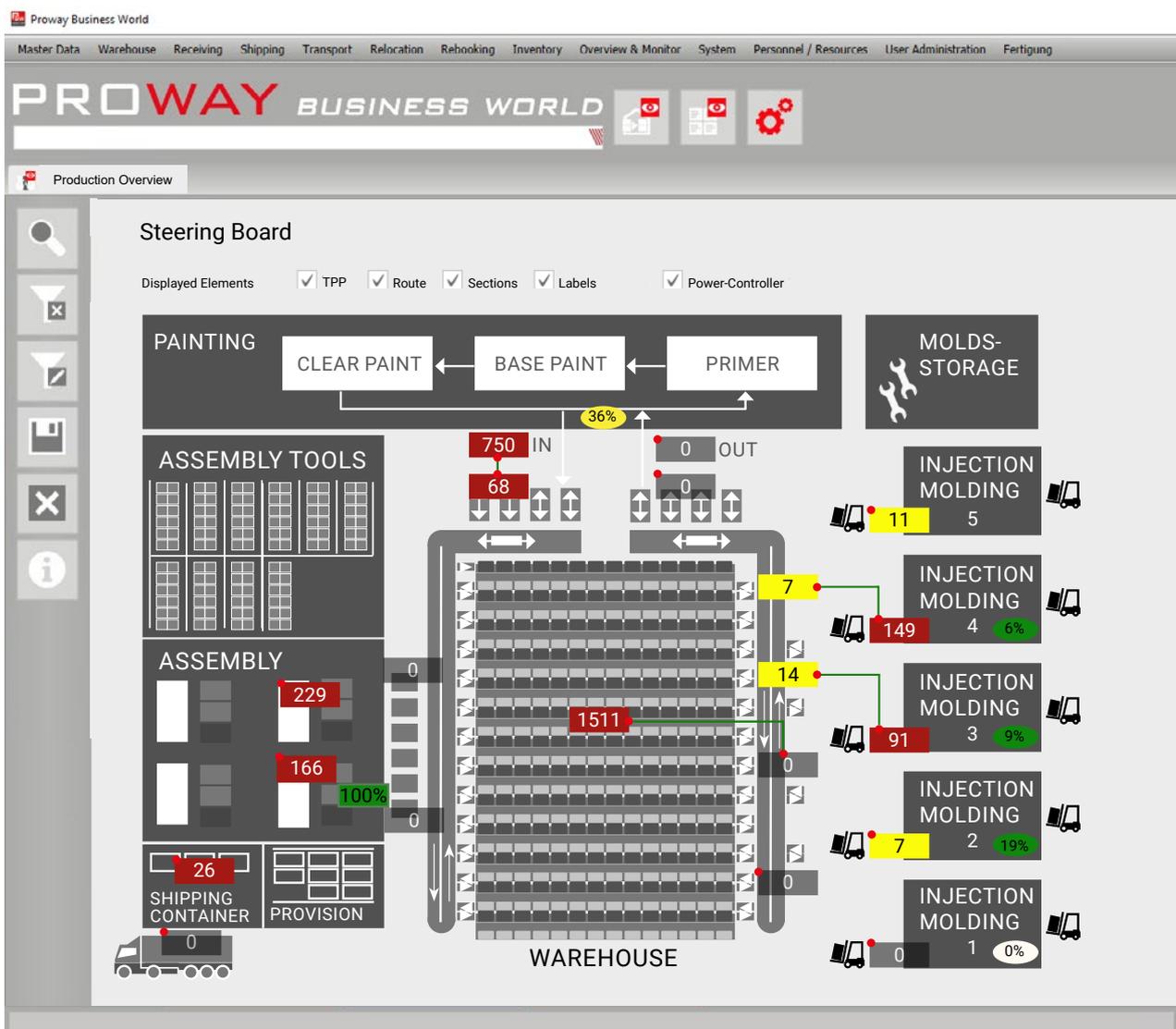


Fig. 10: production control

GRAPHICAL VIEW OF THE WAREHOUSE

- ▶ graphical view of the warehouse, the production and the shipping area
- ▶ transport- and decision-points with actual stock
- ▶ announcements of the way for products located in transport
- ▶ topical degree of performance per production line by means of power controller
- ▶ new installations and changes of transport points and paths within the graphic can be easily created with the mouse and activated immediately
- ▶ any number of warehouse layouts (e.g. ground floor and first floor, block warehouses and outdoor areas) can be integrated into the dialog

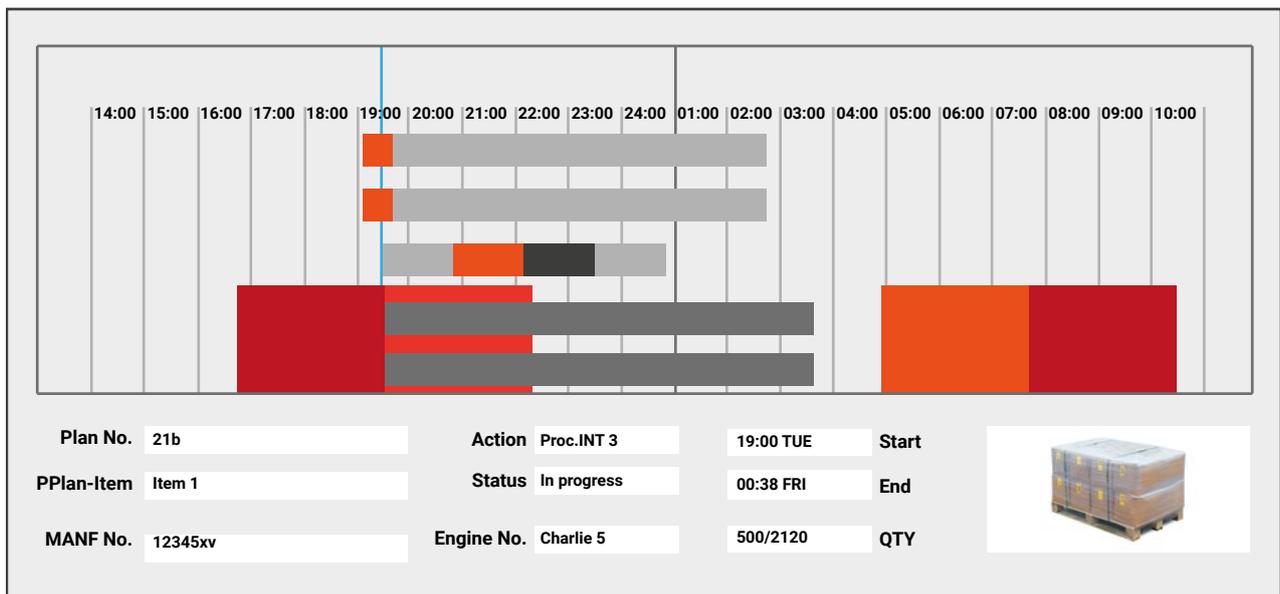


Fig 11: production plan

PRODUCTION PLAN

The production plan administrates:

- ▶ shifts
- ▶ workstations
- ▶ storage technology
- ▶ machines
- ▶ persons
- ▶ tools

INVENTORY

The inventory is the collection and verification of all existing stock of an owner at his site.

The resources managed by PBW (mainly goods such as objects, materials or articles) are recorded by counting, measuring or weighing with respect to their location (storage location) and load carrier (LC). PBW guides the users through the process and provides all necessary and verifiable documents.

PBW differentiates the following inventory types

- ▶ end of period (annual) inventory
- ▶ permanent inventory
- ▶ time-shifted inventory

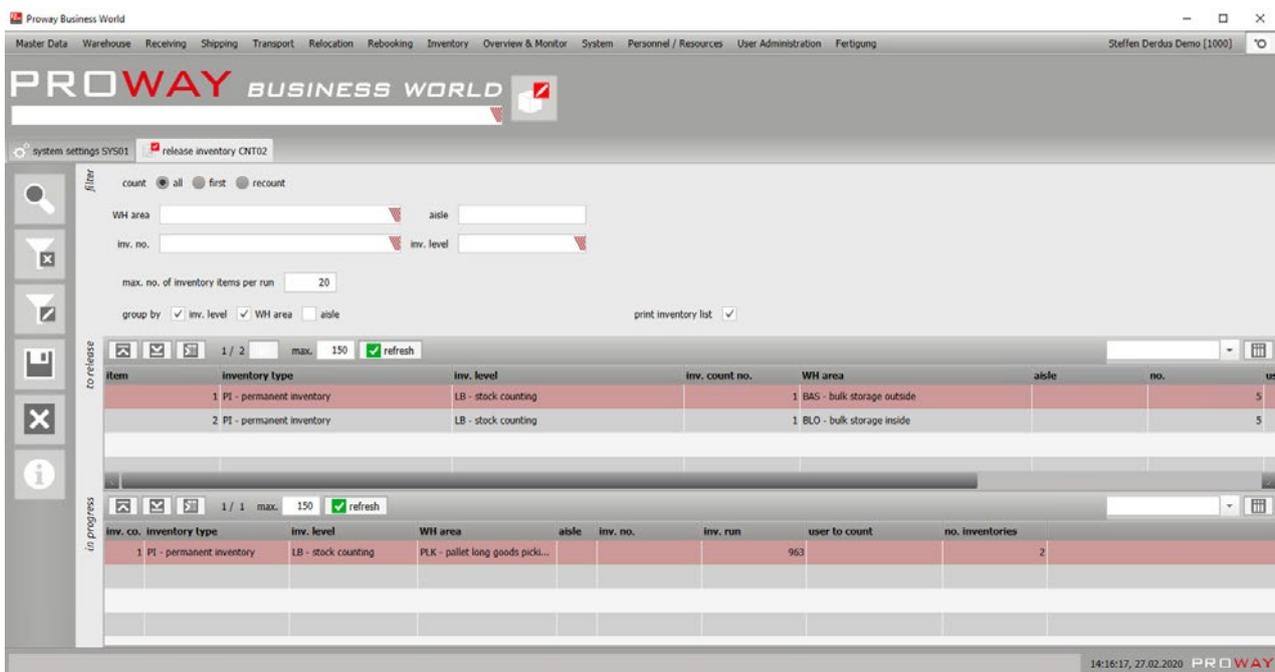


Fig. 12: inventory

ABSTRACT PARAMETERS

SELECTIONS

- ▶ owner
- ▶ material
- ▶ warehouse area
- ▶ load carrier
- ▶ stock ID
- ▶ ...

RECORD

- ▶ completeness check
- ▶ collection of quantities
- ▶ note for quantity diff
- ▶ ...

ANALYSIS

- ▶ inventory overview
- ▶ inventory differences
- ▶ open inventories
- ▶ inventory reports
- ▶ ...

RELEASE

- ▶ first count
- ▶ recounts
- ▶ grouping
- ▶ assignment mobile device
- ▶ ...

CHECK

- ▶ number of differences
- ▶ item overview
- ▶ colour marking of differences
- ▶ generation recounts
- ▶ ...

COUNT

- ▶ route optimisation
- ▶ mobile devices
- ▶ automatic warehouse

CLOSE

- ▶ automatic confirmation to ERP systems
- ▶ release of stocks for disposition
- ▶ ...

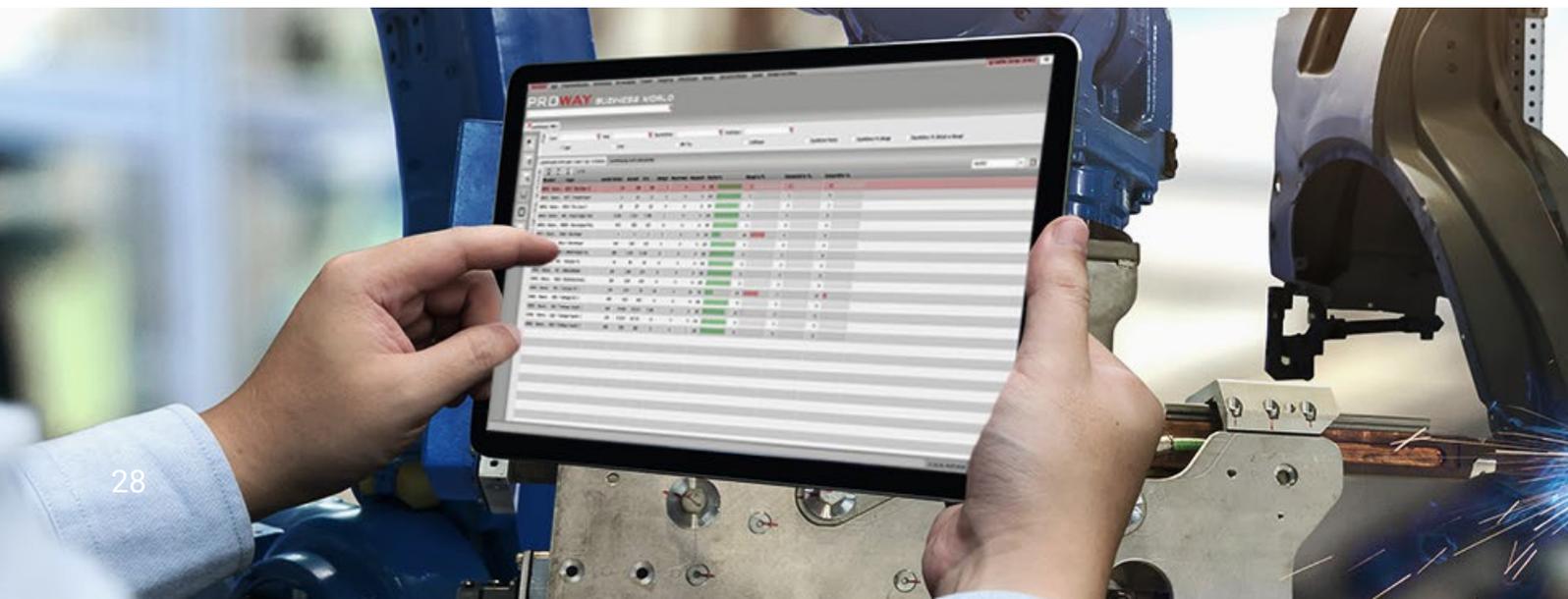


MOBILE SERVICES & CLOUD SOLUTIONS

All important functions are also available on mobile devices (MDE, tablets, mobile phones, etc.). We also offer PBW as a cloud solution.

- ▶ display worklists
- ▶ goods receipt
- ▶ transport confirmations in push and pull mode
- ▶ initiating stock transfers and replenishment
- ▶ order picking
- ▶ packaging
- ▶ NVE formation
- ▶ loading
- ▶ Kanban
- ▶ CEP inbound deliveries
- ▶ CEP receipts
- ▶ CEP shipping
- ▶ inventory
- ▶ balance sheet transfers
- ▶ ...

The mobile PBW application is web-based and can be used with any standard browser. Thus PBW can be called up independently on any mobile device.



IN REAL TIME. ON YOUR MOBILE DEVICES. WORLDWIDE. ANYTIME.

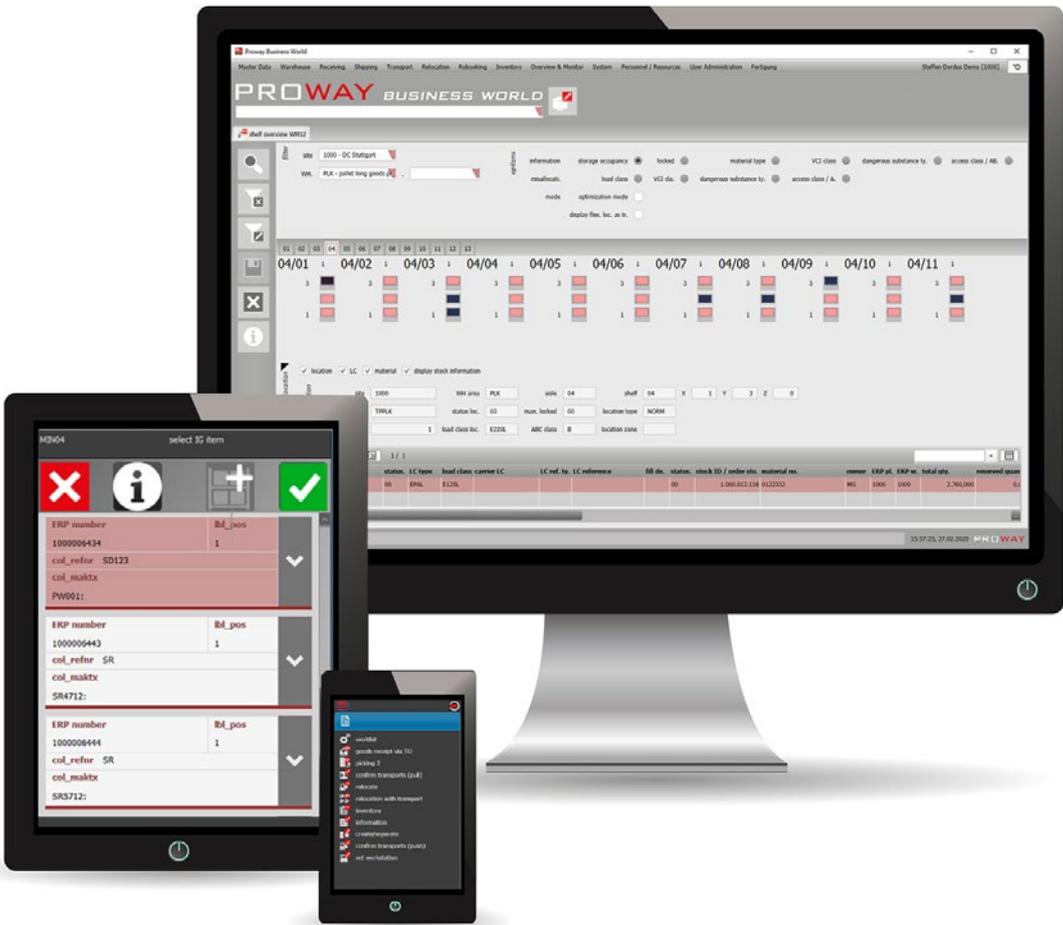


Fig. 13: PBW mobile

ARTIFICIAL INTELLIGENCE

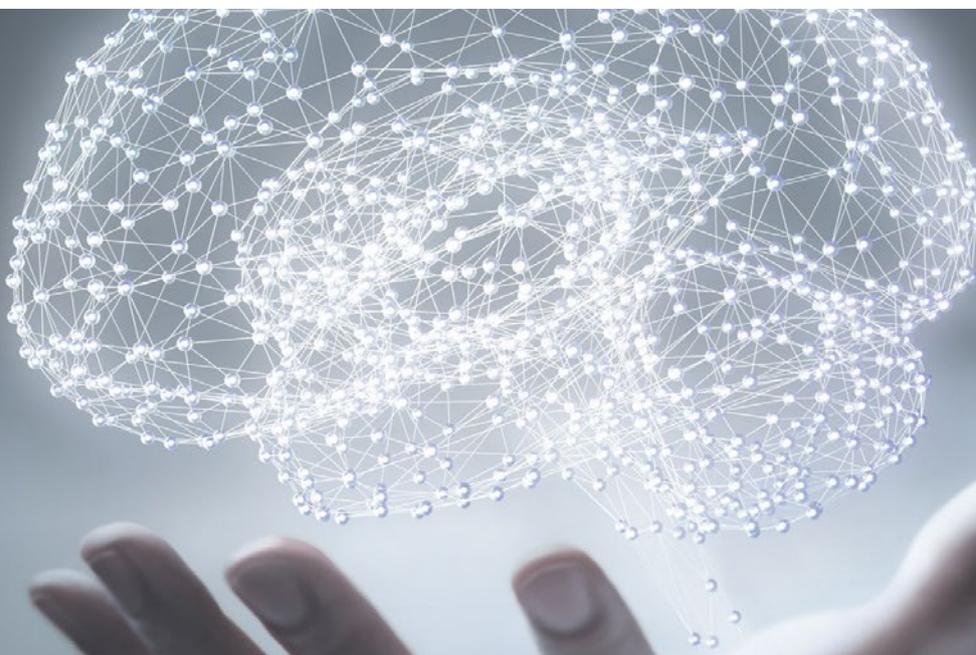
The optimal flow of materials and the planning of resources, whether human or machine, is becoming increasingly complex and can hardly be controlled by conventional means. Artificial intelligence and neuronal networks help PBW to achieve optimal results in a short time.

With the help of AI, we make forecasts based on provided data, for example, to optimize resource planning and the utilization of a logistics location. Recurrent neuronal networks (RNN, LSTM) can be used to process sequences.

Increasing data volumes and computing power will favour the use of AI in various fields of industry and society in the future. If sufficient computing power is available, unstructured or incomplete data can also be used.

In this way, forecasts of the resource requirements of people and industrial trucks in a warehouse can be made on the basis of historical and current data. For AI-supported resource planning, the automatic evaluation of the data and the creation of a relationship between these data will play a decisive role in the future. Several material groups and warehouse areas are examined over a certain period of time.

With AI-supported resource planning, existing resources can be used and controlled more sensibly and efficiently.



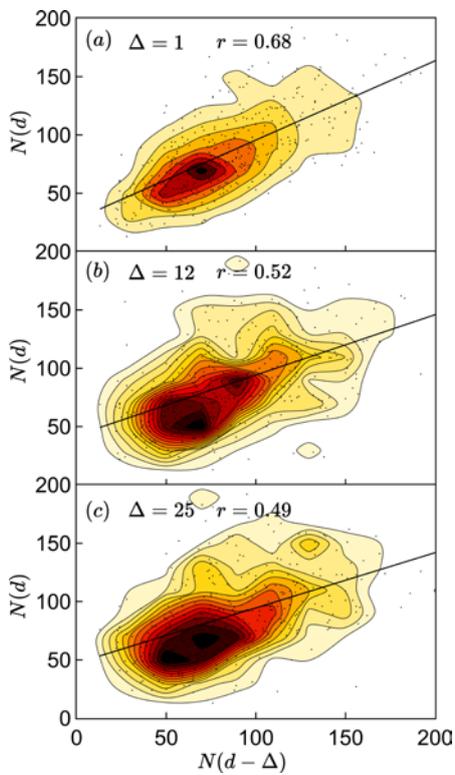


Fig. 14: correlation of the picking figures in a manual warehouse, depending on the time

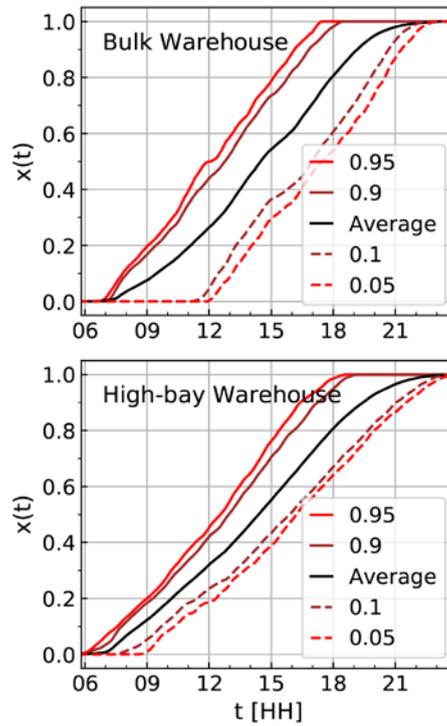


Fig. 15: proportion of picking processes completed at time t $x(t)$ in relation to the total daily number. The quantiles 0.95, 0.9, 0.1, 0.05 and the average are shown.

Proway Business World

Master Data Warehouse Receiving Shipping Transport Relocation Rebooking Inventory Overview & Monitor System Personnel / Resources User Administration Fertigung Steffen Derdus Demo [1000]

PROWAY BUSINESS WORLD

Weekly Shift

Overview

Calendar week		CW total		Mon		Tue		Wed		Thu		Fri		
Forecast resources	Order volume	Number of resources												
Shuttle Warehouse	35420	50	8286	10	8106	10	6242	10	7119	10	5667	10		
Tray Warehouse	1269	9	368	2	229	2	188	1	277	2	207	2		
High-bay Warehouse	7166	19	1754	4	1550	4	1294	4	1528	4	1040	3		
Cable Warehouse	792	30	201	6	178	6	135	6	134	6	144	6		
Bulk Warehouse	495	8	119	2	99	2	84	1	107	2	86	1		
Pallet Warehouse	1594	19	403	5	295	3	296	3	364	5	236	3		
Totals Shift	46736	135	11131	29	10457	27	8239	25	9529	29	7380	25		

Calendar week		Mon	Tue	Wed	Thu	Fri
Forecast resources	Number of resources	Number of resources	Number of resources	Number of resources	Number of resources	Number of resources
Available resources	147	30	30	30	28	29
Forecast resources	135	29	27	25	29	25
Deviation resources	+12	+1	+3	+5	-1	+4

PROWAY

Fig. 16: resource forecast

INTEGRATION MANAGEMENT

Additionally to its standardized interface to all common ERP systems (mainly SAP R/3 or Microsoft Dynamics (Navision)) PBW can be connected to any ERP system using a variety of industry specific as well as customer specific interfaces.

Data exchange between the ERP system and PBW does not necessarily to take place using TCP/IP, but can be done also using tables, databases, XML, FTP and file interfaces.

Additionally, there are interfaces for connecting external shipping software systems to control systems for automatic labelling of already packaged goods. PBW also supports the integration of various peripheral devices such as scanners, weight scales, labellers or carton erectors.

- ▶ IDoc-Com.
- ▶ BAPI/RFC-Com.

- ▶ Interface Monitor
- ▶ File/XML-Interface



Fig. 17: ERP services

Proway has perfected both its own standardized TCP / IP interface in many projects and established a long-standing expert knowledge about customized interface adjustments and techniques.



AUTOMATION SERVICES

Function groups & functions

(enter / show / change / delete)

SYSTEM CONTROL

- ▶ start
- ▶ stop
- ▶ monitoring of the status quo in tabular form
- ▶ monitoring of the status quo in graphical form
- ▶ failure statistics in tabular form
- ▶ failure statistics in graphical form
- ▶ visualisation by app
- ▶ collision monitoring

I-POINT

- ▶ manually
- ▶ automatically
- ▶ combination workplace E/A/I

TELEGRAM HANDLING

- ▶ interface for UST
- ▶ TCP/IP protocol
- ▶ serial by VDI 5600
- ▶ manufacturer-independent

K-POINT

- ▶ manually
- ▶ automatically
- ▶ combination workplace E/A/I

INNOVATIVE. MODERN. MORE FLEXIBLE. BETTER.

Often, existing business processes have to be adapted to the WMS software. PBW is different. PBW can be adapted to your business processes. Extremely flexible.

MATERIAL FLOW AND TRANSPORT ROUTE MATRIX

- ▶ graphical view of the warehouse with all transport points and routes
- ▶ new creation and modification of transport points and routes within the graphic
- ▶ all information about the transport points and its subfunctions can be displayed in the graphical view
- ▶ any number of warehouse layouts (for example ground floor and first floor) can be integrated into the dialogue

ACTIVITY BASED COSTING

- ▶ definition of beneficiaries, cost centres, account assignments and types of benefits with their cost rates
- ▶ forming benefit type groups to calculate costs for partial and main processes
- ▶ fixed costs management
- ▶ creation of invoices for the beneficiaries for any period
- ▶ analysis and monitoring of processes up to individual activities
- ▶ process cost accounting can be used with any journal file, regardless of PBW-WMS

PROCESS PLAN TEMPLATES

- ▶ processes in PBW can be performed via process plan templates
- ▶ process and material flows can be created in different variants
- ▶ assignment of templates to object types (for example, order types, etc.)
- ▶ management of customer-specific processes in a separate tab
- ▶ linking actions in the process plan with predecessor or successor activity
- ▶ different control and confirmation levels
- ▶ determining the target time for an activity
- ▶ record the lead time of the individual process steps for each order

SYSTEM CONTROL

- ▶ Management of the functionalities in PBW via key fields, which can be adapted in large parts by the customer
- ▶ Most of the parameters and functions can be adjusted via configuration tables. PBW can be adapted to the customer or to changed processes without reprogramming
- ▶ The system control is clearly arranged, as the parameters are displayed in tabs for each module
- ▶ It is possible to manage the communication with automatic warehouses and their conveyor technology, as well as communication with machines of a production line.

USABILITY

- ▶ Clear and individually adjustable dialogs
- ▶ Input control via value lists, calendar function. Graphical highlighting of mandatory fields
- ▶ Functions not required in the context are greyed out
- ▶ Context-dependent entries in value lists to avoid errors. This means that only combinations of values can be used which are stored in the PBW internal matrixes
- ▶ Customer-focused layout of filter and table fields in all dialogues. The adjustments are made via dialogue. Programming is not necessary

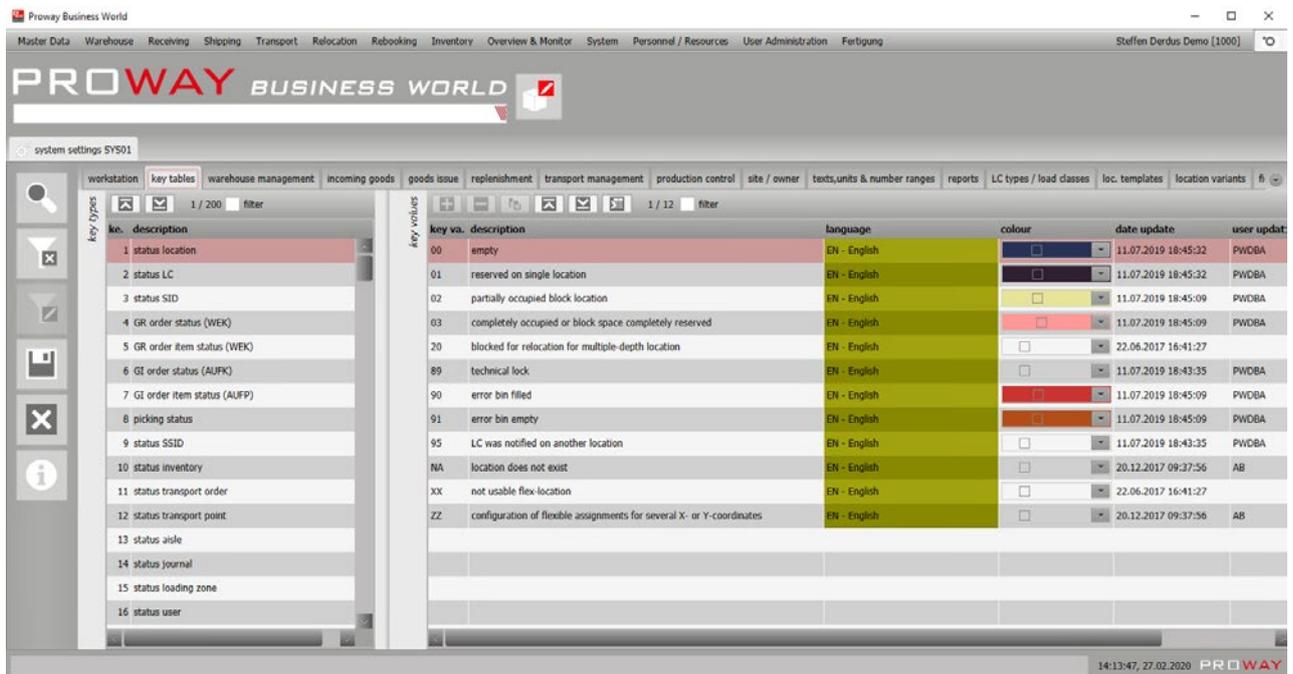


Fig. 18: system settings and key tables

OVERVIEW & ANALYSIS

- ▶ graphical user interfaces for overview and analysis
- ▶ automated optimization of e. g. misallocations in the warehouse due to dimensions, ABC classes, VCI and types of hazardous substances in the background or in the case of rest periods
- ▶ process flow, material flow and inventory analyses on all levels in the warehouse possible (site / warehouse area / location / order / tour / process area / etc.)
- ▶ display of key performance indicators (KPI) in workstations or in web-based on mobile devices
- ▶ KPIs can be created individually
- ▶ view of already stored archive data in overviews
- ▶ transaction-related switching to other dialogues with the right mouse button
- ▶ user-specific dialog adjustments: Design, font size, show and hide columns, move columns, save filter variants
- ▶ process control with more than 2000 information, warning and error messages
- ▶ tool tip texts
- ▶ 1.800 pages online help related to dialogues, tabs and functions
- ▶ the customer wording can be adopted for all texts in the dialogues. Programming is not necessary

The screenshot shows the PROWAY BUSINESS WORLD software interface. The main window displays a table titled 'storage occupancy WM10'. The table has columns for site, WH area, # cells, total, empty, occupied, reserved, locked, empty in %, occupied in %, reserved %, and locked in %. The data is as follows:

site	WH area	# cells	total	empty	occupied	reserved	locked	empty in %	occupied in %	reserved %	locked in %
1000 - DC Stuttgart	ATK - fast mover	60	60	60	0	0	0	100	0	0	100
1000 - DC Stuttgart	BLO - bulk storage inside	412	240.340	240.198	142	0	29.994	100	0	0	12
1000 - DC Stuttgart	BSO - bulk storage south-east	24	239.952	239.864	88	0	0	100	0	0	0
1000 - DC Stuttgart	HRL - victualing warehouse ...	4.838	17.377	17.287	90	0	11.221	99	1	0	65
1000 - DC Stuttgart	KOFE - KOFE	10	50	38	9	3	0	76	18	6	0
1000 - DC Stuttgart	KTL - small parts warehouse	348	348	39	309	0	29	11	89	0	8
1000 - DC Stuttgart	LGK - long goods cantilever ...	470	470	237	233	0	92	50	50	0	20
1000 - DC Stuttgart	PLK - pallet long goods picki...	561	561	19	538	4	13	3	96	1	2
1000 - DC Stuttgart	PLV - pallet long goods reser...	858	858	148	708	2	17	17	83	0	2
1000 - DC Stuttgart	QS	10	50	45	5	0	0	90	10	0	0
1000 - DC Stuttgart	SHL - Löffelhardt Shuttle	9.416	9.416	9.416	0	0	9.416	100	0	0	100
1000 - DC Stuttgart	TBL - tray storage system	3.834	0	0	0	0	0	100	0	0	0
1000 - DC Stuttgart	VB01 - dispatch area 01	6	5.994	5.994	0	0	0	100	0	0	0
1000 - DC Stuttgart	WE2B - main goods receipt (...)	29	87	86	1	0	0	99	1	0	0

Fig. 19: overview of warehouse occupancy

MORE FUNCTIONS. MORE POSSIBILITIES.

Still not enough? KANBAN, CEP, FULFILLMENT are another excerpt of the powerful functionality in PBW. With PBW functionally no wishes remain open.

KANBAN PROCESSING

In Kanban processing, replenishment to a customer is based on its actual consumption. In this way, inventories are reduced to a minimum when, for example, a production supply is required and costs will be saved.

PBW supports this Kanban process

- ▶ storage of the customer's empty Kanban boxes in the warehouse
- ▶ confirmation of the box numbers to the assigned ERP system
- ▶ receipt of the delivery order from the ERP system
- ▶ assignment of the required materials to these boxes
- ▶ delivery of the filled boxes to the respective customer

MORE THAN JUST SIMPLE WMS.

PBW is a standard product with generic structure and almost unlimited possibilities – depending on customer requirements.

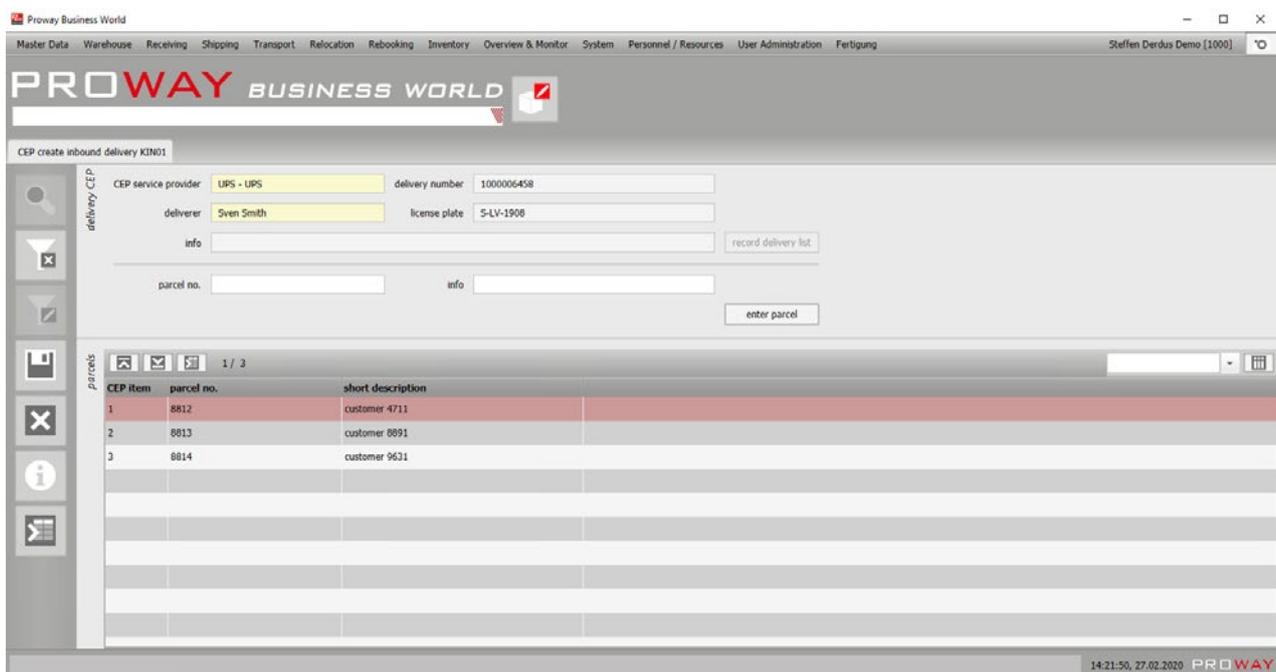
FULFILLMENT

Fulfillment includes shipping services provided by PBW on behalf of other trading platforms. For example, delivery notes, invoices or other documents are attached with the shipment

- ▶ management via order types
- ▶ demand and printing of external delivery notes
- ▶ confirmation to the corresponding ERP and / or customer systems

HANDLING OF PARCEL SERVICE PROVIDERS – CEP

Providers of CEP services primarily transport consignments with relatively low weight (up to approx. 30 kg) and volume, such as letters, documents, parcels and small piece goods. These restrictions on size and weight allow a high degree of standardization in processing. PBW supports CEP processing both for incoming goods of CEP deliveries and parcel shipments via CEP service providers.



CEP create inbound delivery KIN01

CEP service provider: UPS - UPS delivery number: 1000006458
deliverer: Sven Smith license plate: 5-LV-1908
info: record delivery list
parcel no.: info: enter parcel

CEP item	parcel no.	short description
1	8812	customer 4711
2	8813	customer 8891
3	8814	customer 9631

14:21:50, 27.02.2020 PROWAY

Fig. 16: recording CEP deliveries

CEP Goods Receipt Processing

- ▶ Management of all delivered CEP packages of a service provider in an inbound delivery list
 - with the name of the delivery person
 - the respective CEP service provider
 - if necessary, a vehicle license plate
 - if necessary, comments on the delivery
- ▶ Recording of the package numbers for the respective packages
- ▶ A time-shifted collection of the material inside the packages is possible by means of:
 - storage of the closed packages and assignment of a reference
 - later issuing and collection of the contents of the package

CEP Goods Issue Processing

- ▶ Administration of different shipping methods for the respective CEP services
- ▶ Separate packaging at specially designed packing stations
- ▶ Weight control of the packages
- ▶ Providing the packages with the corresponding CEP labels
 - customers address
 - consignor
 - size, weight and dimensions of the package
 - reference numbers
 - routing information
 - shipment number
- ▶ Listings of all delivered order items or material and quantity
- ▶ Delivery note printing
- ▶ Scanning of documents
- ▶ Communication with the CEP service provider via interface



PROWAY

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Feel free to contact us

We would be happy to advise you with a personal appointment and work with you to develop individual solutions for your specific problem. You deliver the challenge – we deliver the solution!



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