Paper Store

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1 Description of plant

The plant is a storage rack for film pallets with the following additional functions:

- Rack serve carrier (RSC) with forks
- 6 positions for storage and retrieval jobs
  - 4 chain conveyors with 2 positions each
  - 2 chain conveyors with1 position each
- Commissioning of chaotically stored material
- The following types of transport are possible:
  - Storing film pallets
  - Retrieving film pallets
  - Shifting film pallets
- Exchange of files for storage and retrieval jobs with higher-level system using ASCII files.
- Additional points of operation
  - Storage PC
  - Retrieval PC
- All storage movements and the material stock are logged.

2 Store Management Software Overview

2.1 General information

The 3Tec store management and control system can be used on standard PC's with a Microsoft Windows NT operating system. It has been written with the Delphi 32-bit development tool. This guarantees that the current-day and future requirements regarding system architecture, flexibility and connection to standard systems and software can be met. The application offers a modern graphical operator environment. The operator screens are kept in a clear, highly functional layout and are intuitively mouse-operated. Information management takes place in a standard database. Another emphasis is the transparent illustration of processes taking place in the store by means of a large number of visual information systems.

All data is stored in a standard database (Paradox), the structure of which can be laid open of so required. It is possible to use standard programs such as Excel to read data and analyse it along various criteria.

SAPI-S7 is used to connect the system with the control units based on Siemens S7 PLC software.

The software used for maintaining and controlling the plant can be divided into the following areas:

2.2 Master data

Master data management includes the description of parts to be stored and commissioned, the definition of storage bays and locations as well as the entire environment and all relevant tasks.

2.3 Movement data

The entire plant situation is kept up to date. This includes the assignment of all store locations, roller conveyors, chains, carriages, the RSC/gantry movements as well as the maintenance of job lists for storage/retrieval/shifting jobs.

2.4 Process control

During the actual operating process, the PC program generates and transmits transport jobs to the RSC's / gantries and to other transportation equipment, monitors these (progress status) and provides permanent updates of the plant image (movement data). This also includes the ability to restart after a failure of the plant or of part of the plant.

3 Storage types

The following types of storage are provided for:

firmly assigned

Material thus marked is stored in firmly assigned locations. The associated store locations are equally marked by type and material number. This type of storage is primarily used for frequently used material.

Advantage: - quick access to a particular material

Disadvantage: - each material requires at least one location.

dynamic

Dynamic storage is single-type storage (as is the case with fixed assignment). However, in dynamic storage the store locations are not tied to a particular material but to a dynamic material group.

This type of storage is useful for frequently used material if these need to be put into storage in extremely varying quantities, while there is not enough space available for a fixed reservation.

Advantage: - quick access to a particular material.
- flexible use of storage space

Disadvantage: - At least one location must be available for each material.

4 Starting the Program

The software is installed on the storage management computer on hard disk "C" in the directory "c:\3Tec\“. The sub-directory "bin" has the file "Lager.exe" ("c:\3Tec\bin\lager.exe"). After starting this file (as per standard configuration the program is started automatically on system start) the following screen appears on the main menu:

Fig. 1: Main screen

From here all storage functions can be accessed. First of all, the user needs to log in. This is done via menu item 5 (Log-in).

4.1 Ending the Program

Before turning off the store management PC the program must be ended and Windows shut down. To end the program press F10 on the main screen. When pressing the key, the system checks for any transportation jobs still going on, i.e. whether any PLC jobs still exist (see 7.1). If this is the case, the program cannot be ended. The running jobs must first be completed.

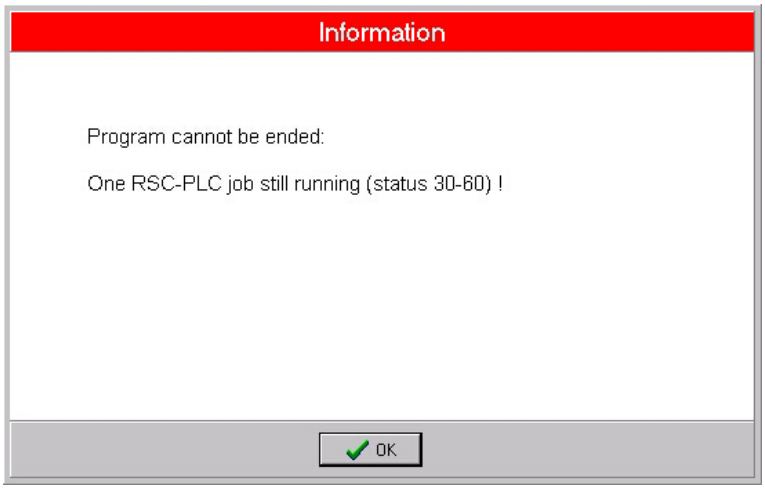


Fig. 2: Program cannot be ended

4.2 Service

The F9 key on the main menu screen can be used to call up a Service screen, showing information on program version, data directories and password levels.

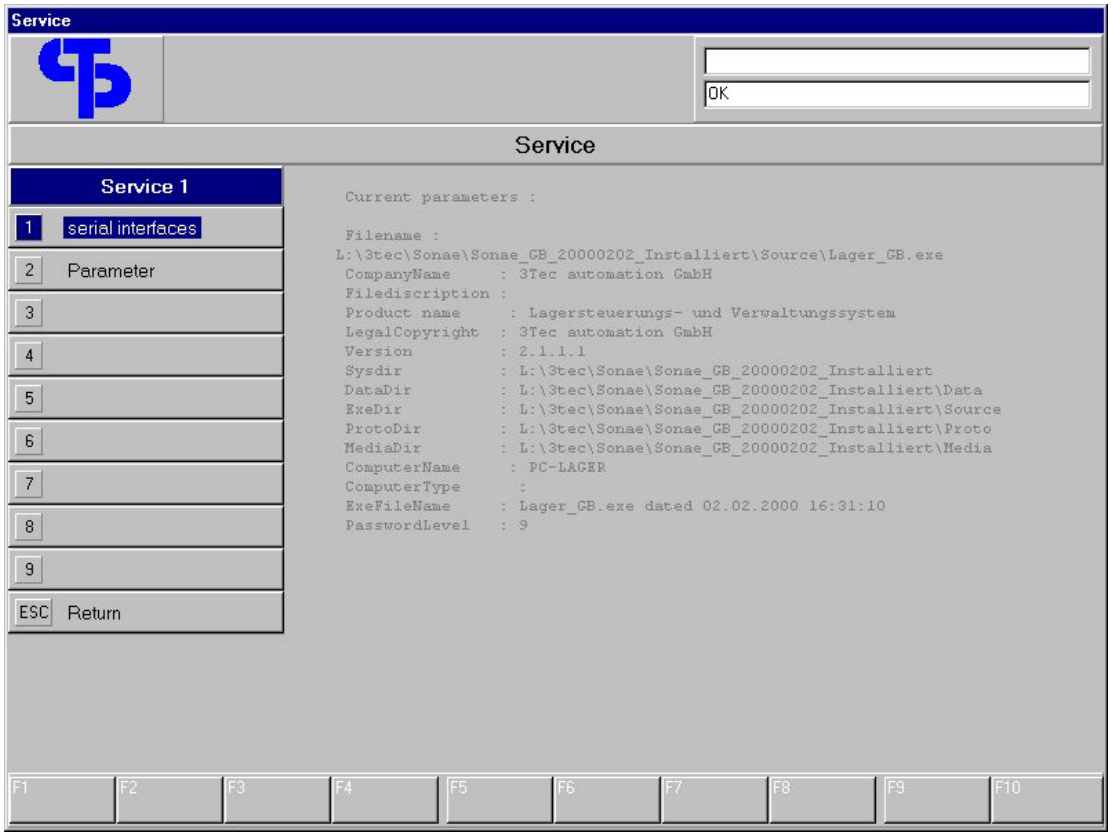


Fig. 3: Service

5 Data Management

The warehouse program manages the bay/location master data and the material master data. In addition, material groups are maintained to divide the store (see storage types, par. 3.).

5.1 Material data

For any number of different materials the following is organised:

- material no. (alphanumeric, no. of digits here: 20)
- description (alphanumeric, no. of digits here: 20)
- dimensions in mm (length, width, thickness)
- colour
- manufacturer
- type of storage (see below)
- association with a material group (necessary for dynamic type of storage)
- minimum stock level

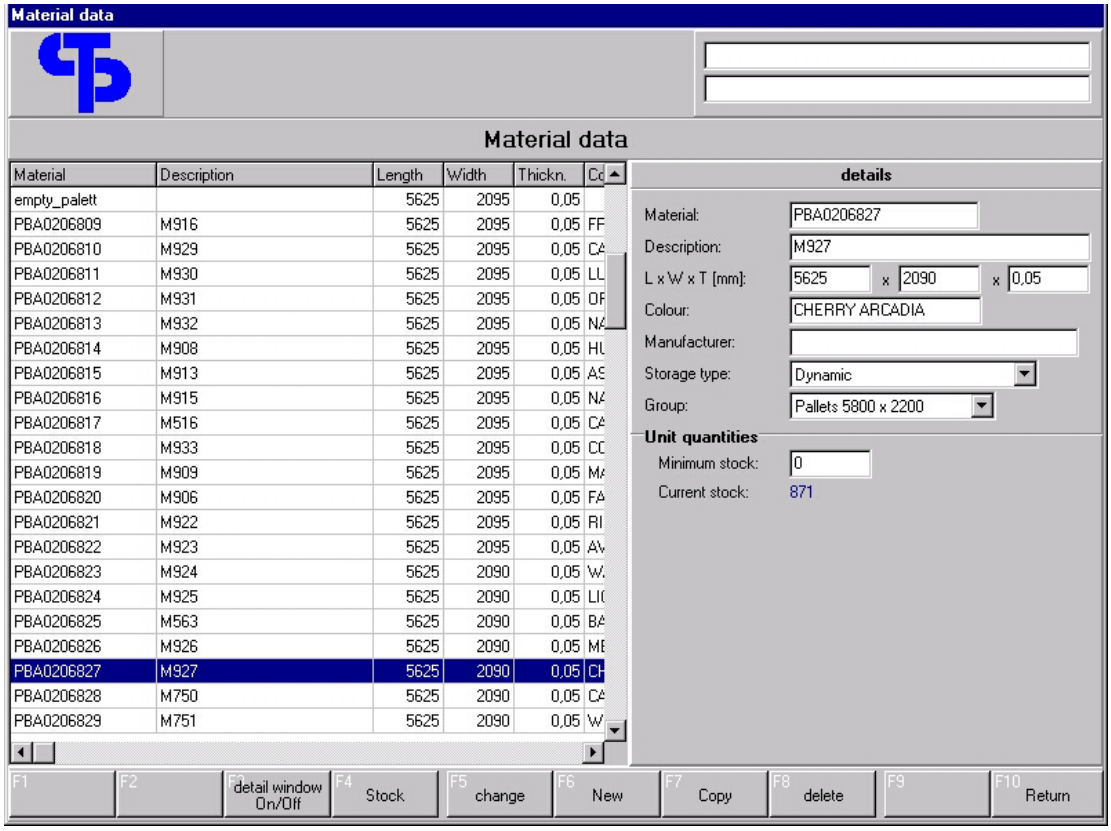


Fig 4: Material master data

In the master material editor new materials can be created (F6) and existing master data changed or deleted. For current material the stock level can be called up (F4).

For dynamically stored material the relevant material group needs to be stated.

The editor also provides information on the current material stock quantity.

5.2 Material selection

Once a material has been created it is no longer necessary to enter the material number manually, e.g. if a retrieval job is to be entered or if the material for a firmly assigned store location is to be defined, a list of all material numbers is shown including descriptions, colour and current stock, and it is possible to select a number with the mouse (double click) or the arrow keys and Enter.

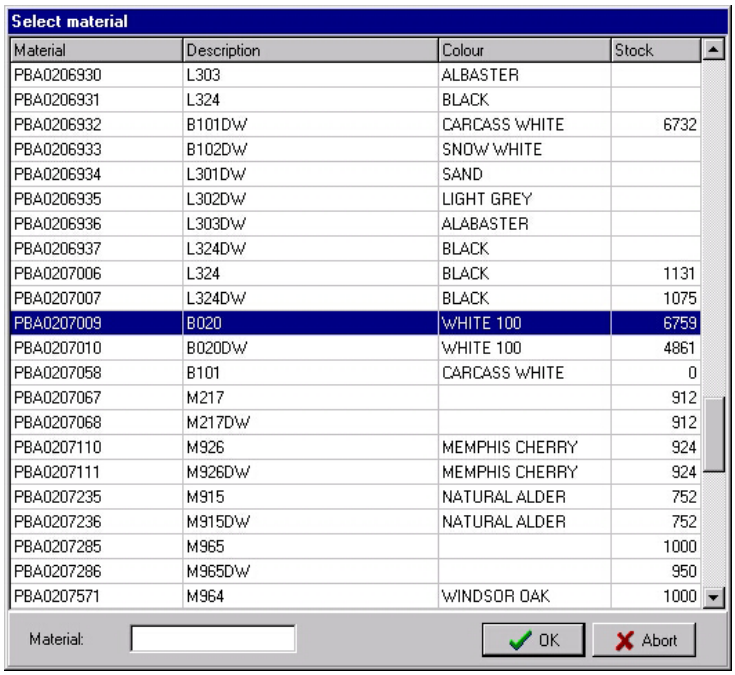


Fig. 5: Material selection

In order to move within the table, the first characters of the requested material number can be entered. The cursor then jumps to the first number starting with the respective characters.

5.3 Material groups

For dynamic storage, material groups must be defined. To each of these groups any number of materials and store locations can be assigned.

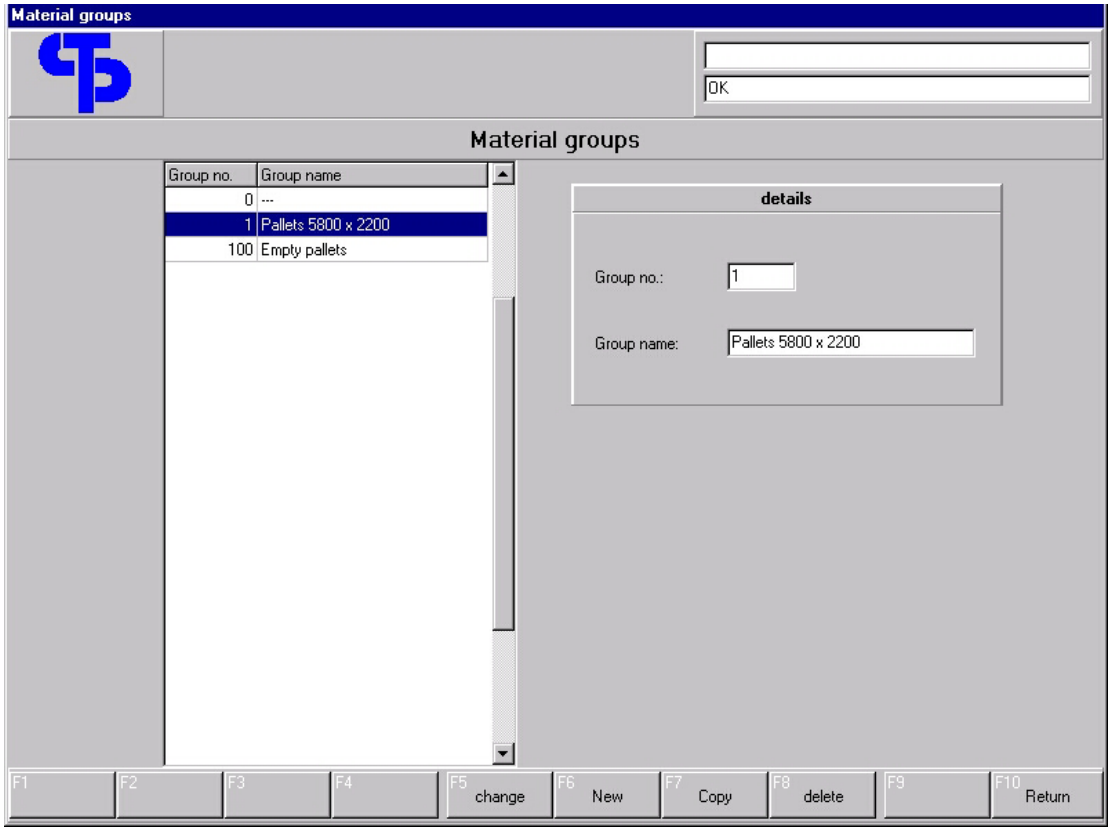


Fig. 6: Material groups

Here, material groups can be created, edited or deleted.

The table serves the purpose of selecting the respective group from the group list for store locations and materials instead of entering a number or a text string.

The possibility of defining the group number oneself it is possible to define the order within the list and thereby create a meaningful grouping.

5.4 Storage bays

The store is divided into bays and locations. First of all the storage bays need to be defined, then locations can be assigned to these bays.

The definition of bay numbers is almost completely free. It is useful to choose an "obvious" numbering which allows conclusions as to the exact location within the store area, e.g., the bay number could be defined as follows:

- Side of rack 1-digit (1=front, 2=rear)
- Row/block 2-digit (starting with 01)
- Level 2-digit (01=bottom)

According to this, bay no. 10501 is located at the front in the 5th block on the bottom level.

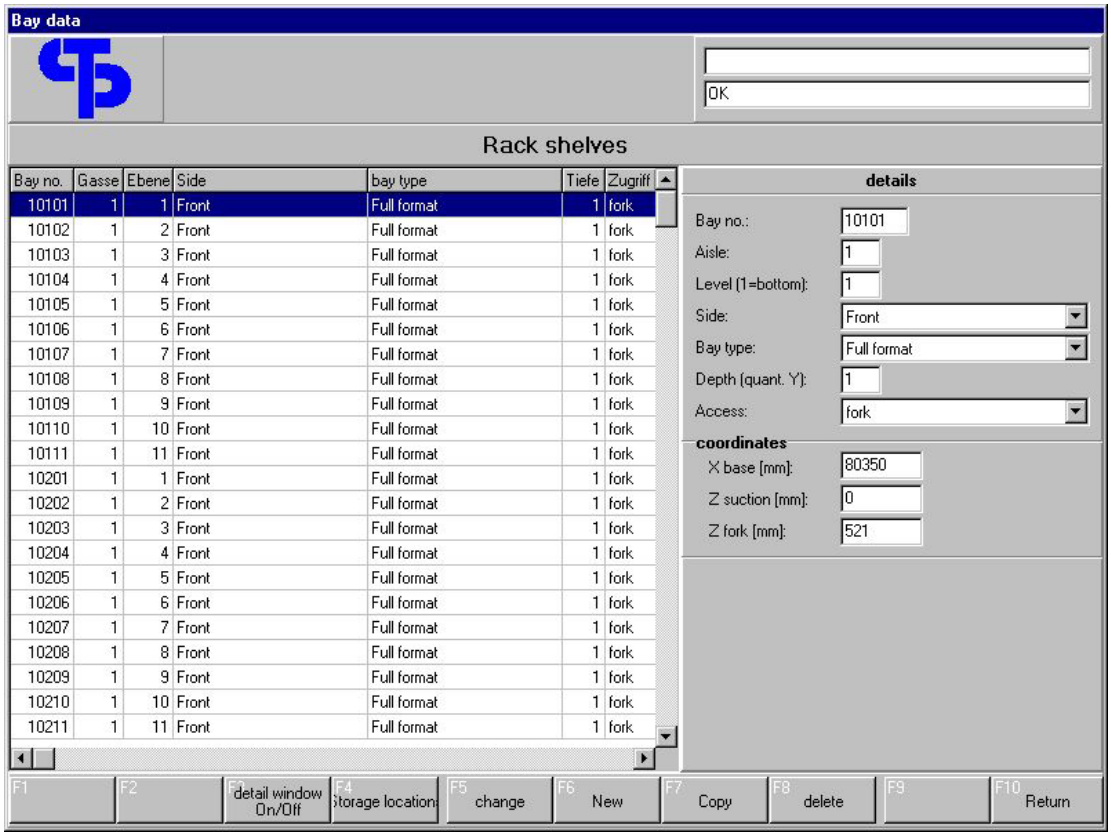


Fig. 7: Rack bays

For purposes of internal administration, some of the bay numbers are assigned to fixed positions. For the given store these are:

- 1000002 – RSC forks
- 1000005 – Storage/retrieval location track 5
- 1000006 – Storage/retrieval location track 6
- 1000011 – Storage/retrieval location track 11
- 1000012 – Storage/retrieval location track 12
- 1000021 – Storage/retrieval location track 21
- 1000022 – Storage/retrieval location track 22
- 1000031 – Storage/retrieval location track 31
- 1000032 – Storage/retrieval location track 32
- 1000041 – Storage/retrieval location track 41
- 1000042 – Storage/retrieval location track 42

Locations are in turn assigned to these special bays to be able to manage the current assignments of storage location, forks etc. It is not permitted to change the master data for these special bays and locations.

This editor can be used to create, change or delete storage bays. Co-ordinates and parameters are maintained for each bay:

- Bay no. - free choice (see above)
- Aisle - here : always 1
- Level - 1 bottom level, here: 11 = top level
- Side - front or rear
- Bay type - here: all bays full format
- Depth - no. of locations behind each other in the bay, here: always 1
- Access - here: fork for all
- X-basis - co-ordinate for traversing axis while the RSC is halted in front of the bay
- Z-suction - here always 0

- Z fork - height of upper edge of jib

Depending on bay type and depth, the master data records for the store locations in a bay are automatically created. In the warehouse discussed here there is exactly ONE store location per bay. To access the data screen for this location, press F4.

5.5 Store locations

Co-ordinates, parameters and assignments are defined for each store location in the store. The store location numbers are derived from the bay number plus an X -index and a Y-index. Because in the given store it is not possible to create several locations behind or beside each other, the X-/Y indices are always 1. Therefore the store location of bay 20403 is designated 20403 1 1.

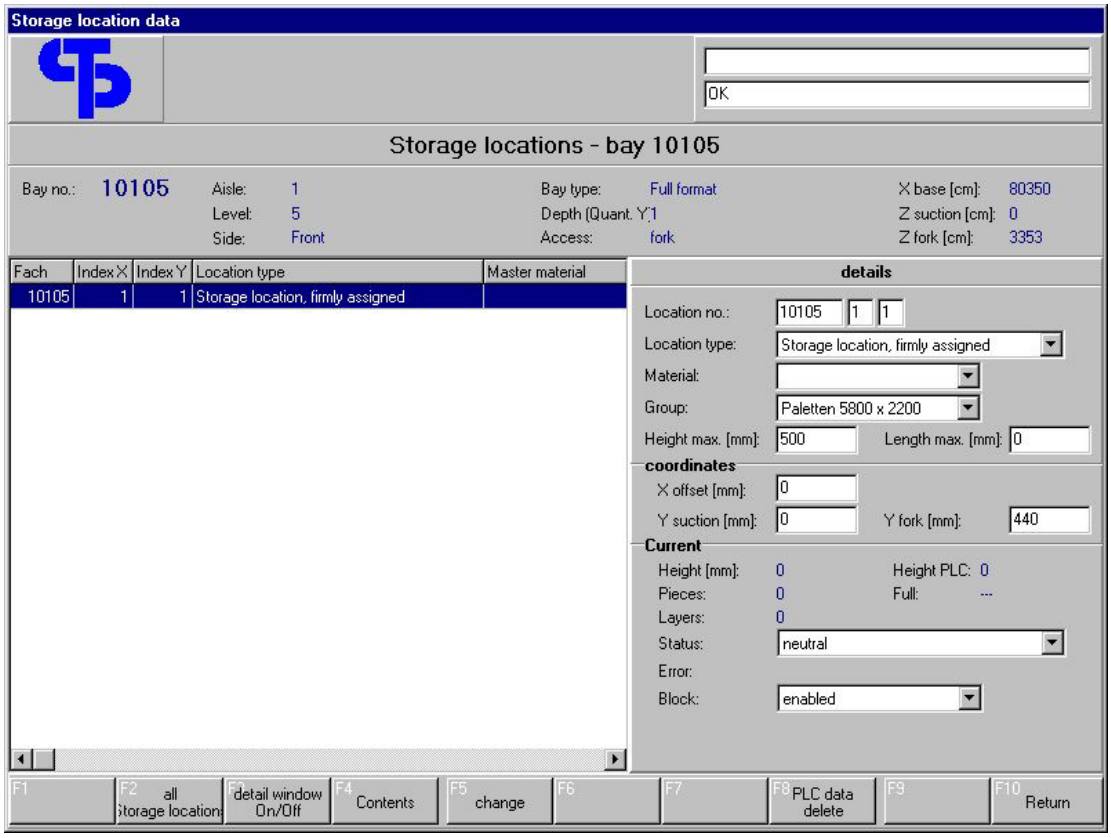


Fig. 8: Store locations in a bay

The upper part of the screen shows the master data for the storage bay. The table below shows one line per store location of the selected bay. The detail window shows the relevant data for the current store location and allows for editing of this data.

- Location no.

  Fixed, derived from the bay no., X-/Y-indices

- Location type

  Defines the use of the location:

  - store location, firmly assigned
    - Reserved for a particular material

- store location, chaotic (not used here)
  - reserved for a chaotic material group
- store location, dynamically assigned
  - reserved for a dynamic material group
- storage/retrieval location external
  - external storage/ retrieval location (not within RSC access)
- RSC forks
  - The rack serve carrier forks
- RSC suction unit
  - not used here
- storage/retrieval location, RSC access
  - external storage / retrieval location within RSC access

- Material

  Master material for location, data needed for firmly assigned store locations

- Group

  Material group for location, data needed for dynamic store locations

- Height max.

  Calculated maximum height for location. The total of all board thicknesses on one location must not exceed this value.

- Length max.

  It is not possible to place boards/pallets on a location that are longer than the value stated here.

- X-offset

  The X-coordinate of a store location is calculated by adding the X-base co-ordinate stored with the bay and the X-offset defined here. Storage racks that cannot hold several locations side by side in a bay have a 0 entered here.

- Y-suction unit

  Depth of travel of suction frame into the bay (not used here)

- Y-forks

  Depth of travel of forks into the bay

In this editor no locations can be created or deleted because the number of locations in a bay is derived from the bay definition.

The section "Current" in the detail window shows the current data for the location:

- Height

  Calculated location height; the sum total of all board thicknesses

- Height PLC

Not used because single-board access is not possible.

- Pieces

  Current number of boards/papers/empty pallets in the location

- Full

  Not used

- Layers

  Current number of layers in a location

  A layer is a single board or a packet of several identical boards lying directly on top of each other. When transporting a single board, the program first determines the top board of the target location. If the characteristics of this board (material no., storage date etc.) correspond to those of the new board, then booking will only cause the number of items per layer to be increased. If the target location has been empty so far, or if different boards are being handled then a new layer is created with the data for the board to be transported and number of items “1”.

- Status

  Current location status. For store locations, the status normally is “neutral". For special locations such as storage/retrieval locations, chains, suction units, etc. the status is used to control transportation jobs to be executed in the store. The following status types are provided for:

  - Neutral
  - Storage as a stack (for storage/retrieval locations or for RSC fork)

    Stack to be put into storage entirely with forks
  - Storage as a stack enabled (for storage/retrieval locations or RSC fork)

    Similar to “Storage as stack”, however the verification as to whether the stack can be accommodated has been carried out beforehand
  - Retrieval intended

    Stack has been retrieved and file for higher-level system is still to be created.
  - Retrieval stack enabled

    A file has been created for the retrieved stack. As soon as the location is no longer occupied according to the PLC, data will be deleted.

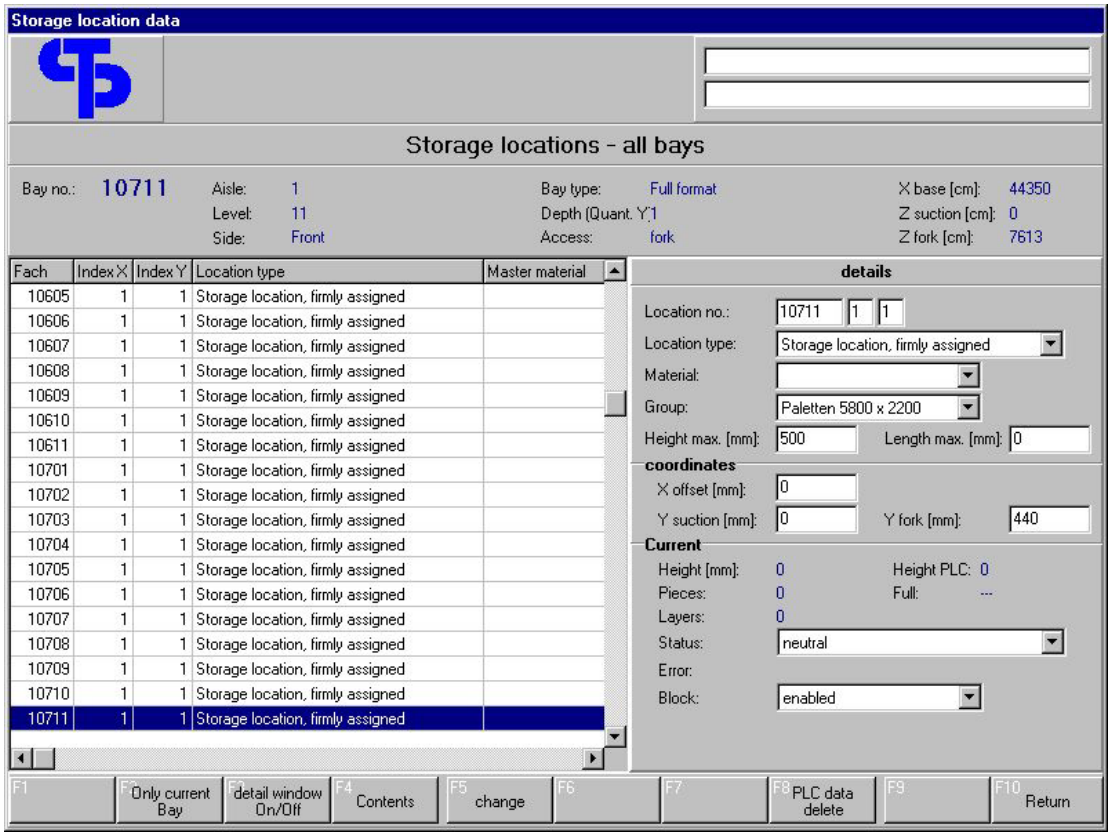


Fig. 9: Store locations for all bays

The location contents for the current location may at any time be called up using the F4- or Enter key.

5.6 Stock data

Each movement in the warehouse immediately causes an automatic update of the material stock. Each store item is maintained with storage place, material no., no. of items and storage date. For remainders, the unique remainder no. and the current dimensions are maintained as well.

The store location contents can at any time be edited manually via the location contents screen.

Moreover there is a possibility of indicating the total stock for a particular material with all the associated store locations.

5.6.1 Material stock

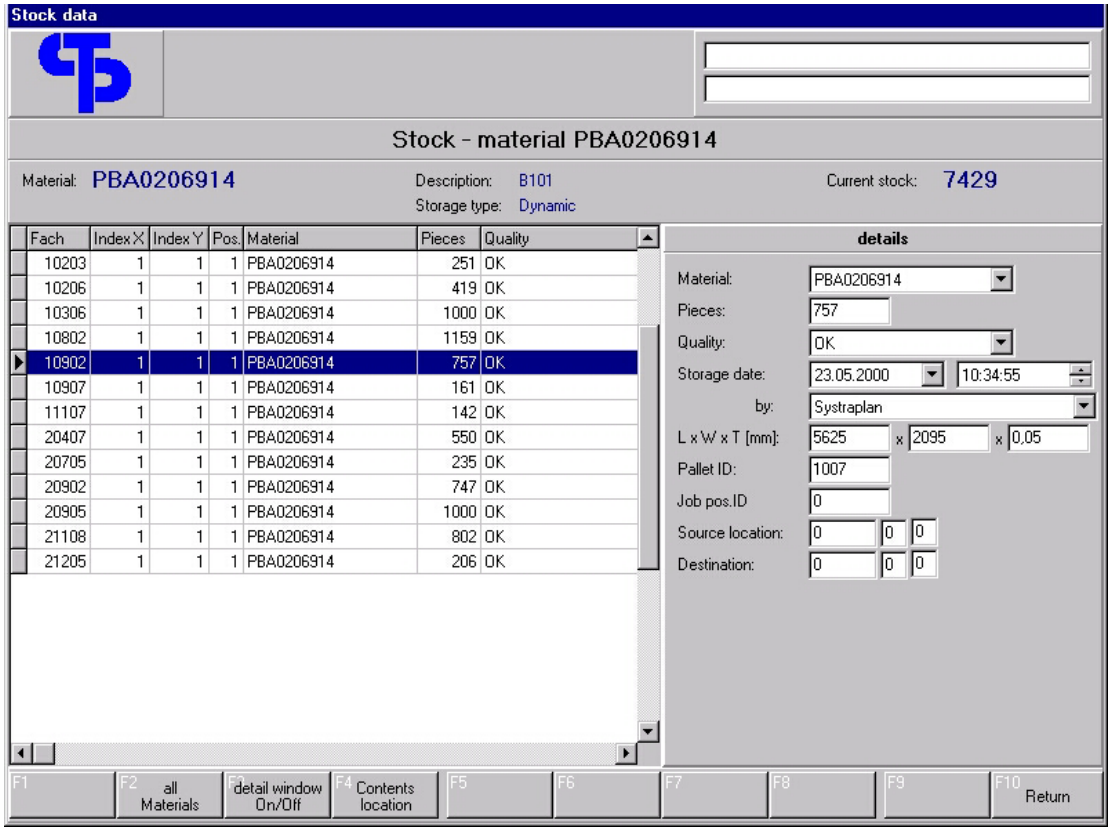


Fig. 10: Material stock

Here the material stock for one or all materials can be called up. The screen shows on which locations and in which layers the boards/papers are stored.

Editing of stock is not possible here (only in "Location contents").

5.6.2 Location contents

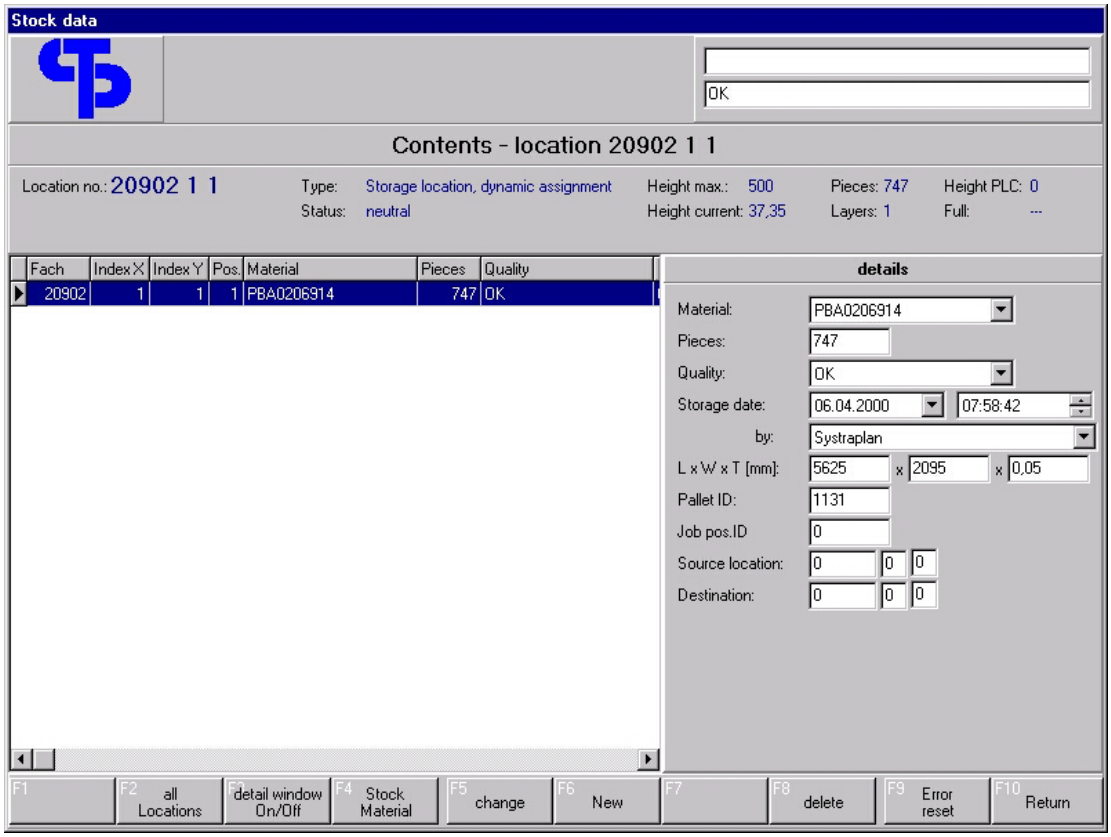


Fig. 11: Location contents

This screen shows the stock for the given location. Layers may be edited, new layers be added or layers be deleted. The order of the displayed data exactly corresponds to the position on the store location (from top to bottom).

Entries in the field "Job pos. ID" mark a reservation of boards for a specific job position and are normally used for stock on depositing and commissioning locations only. A reserved layer is not used for other job positions.

If reservations are no longer valid (e.g. in the case of aborting or deleting a job that has been started), they will be removed with the next start of the program.

6 Work

In this screen retrieval jobs, data for stacks to be stored or shifting jobs may be entered and the respective jobs be started.

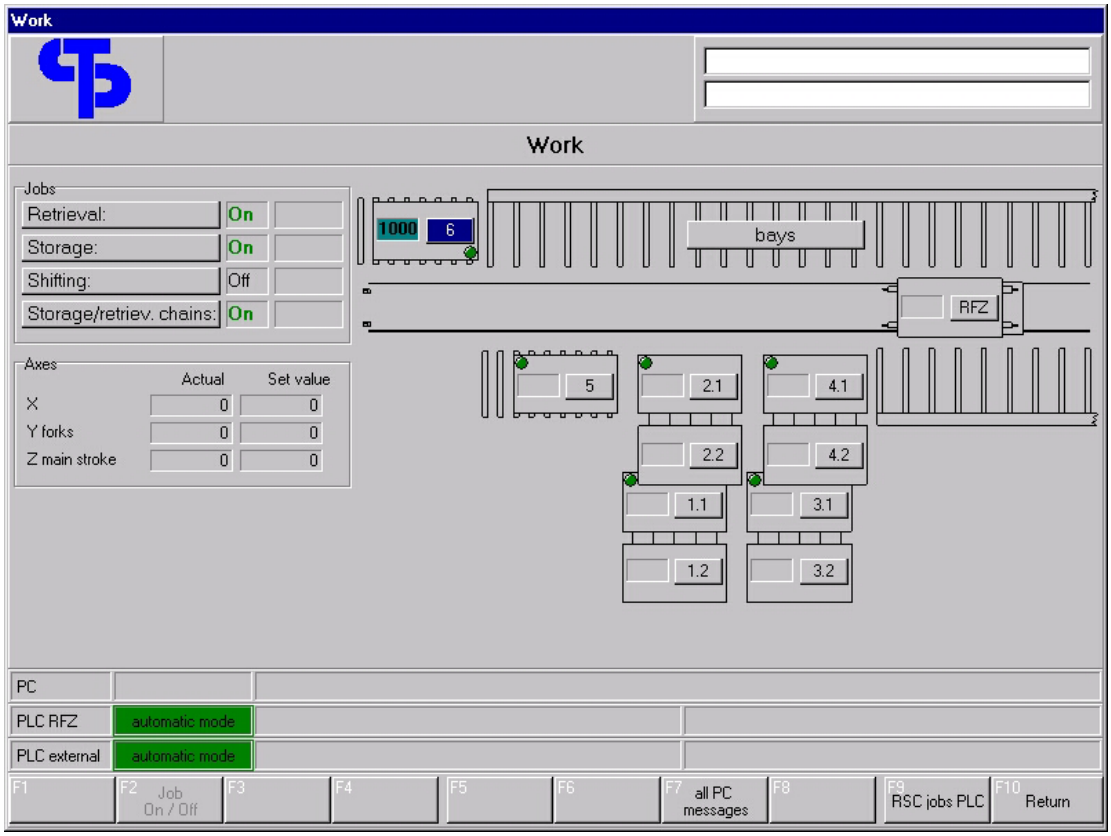


Fig. 12: Work screen

The screen shows a schematic view of the store. The statusses of storage and retrieval locations and of RSCs is shown. All PLC messages are indicated in the status lines at the bottom. The PC messages are displayed in the line at the top. If several messages are active, these will be displayed in intervals, one after the other. Softkey F7 can be used to show all active PC messages in a complete display. Errors are marked in red.

To select any screen element, use the cursor (keyboard or mouse).

In order to activate or de-activate a retrieval, storage or shifting job, use softkey F2 while the job is highlighted (blue cursor set on the respective word).

When a job is highlighted, the respective job editor can be started by pressing the <Enter> key (or by double-clicking with the mouse).

6.1 Retrieval jobs

An unlimited number of retrieval jobs can be created in the system. Each of these retrieval jobs consists of a head and at least one position. The head consists of the job no. and the process key. The positions show information on the boards that are to be retrieved.

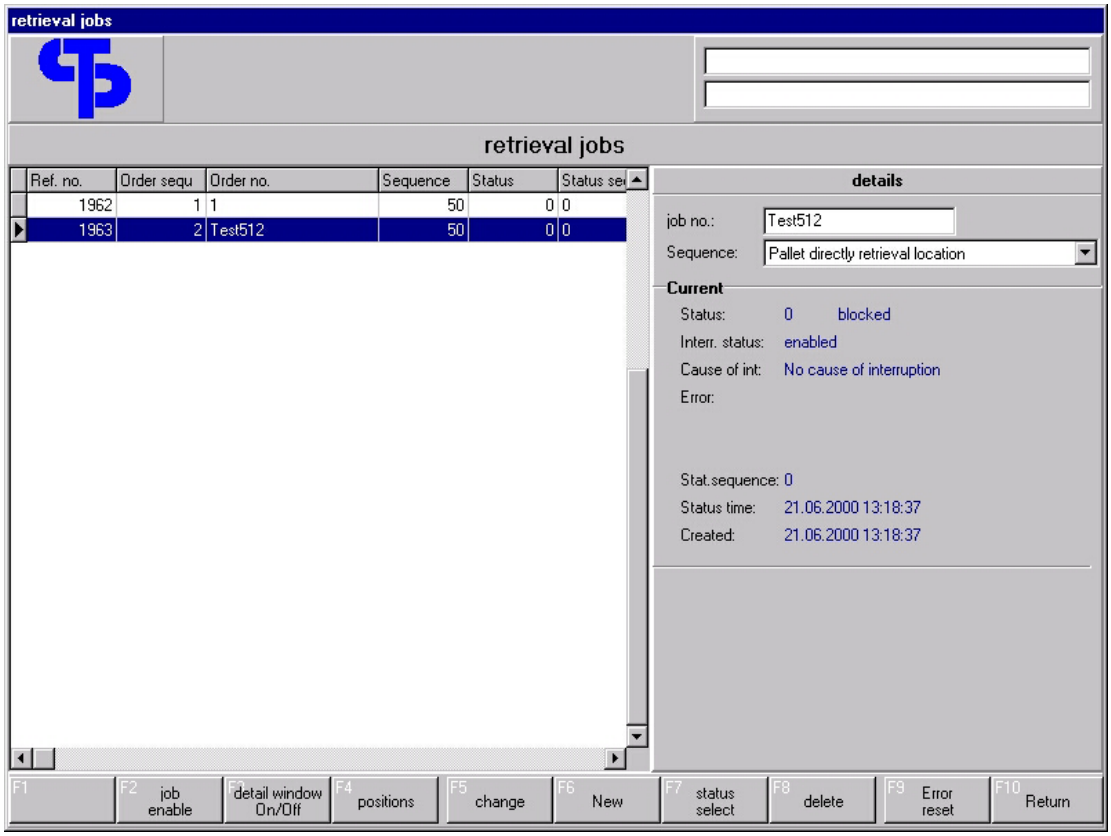


Fig. 13: Retrieval jobs

- Job No.

  Job name, free (alphanumeric), created automatically when pressing F6 (New), can be modified

- Sequence

  Definition of working process with the following options:

  - Pallet directly onto retrieval location

    Pallets are retrieved to the retrieval location.

Jobs are processed in the order of job entry. Only the enabled jobs are processed. To enable a job press the F2 key or activate it after entering the positions (see below).

6.2 Retrieval job positions

The information for the film pallets to be retrieved is managed in the job positions (material no., total no. of items and retrieval location). This list may be filled manually.

The data is transmitted to the PLC in the form of jobs. The PLC takes care of the transportation from the source location to the roller conveyor.

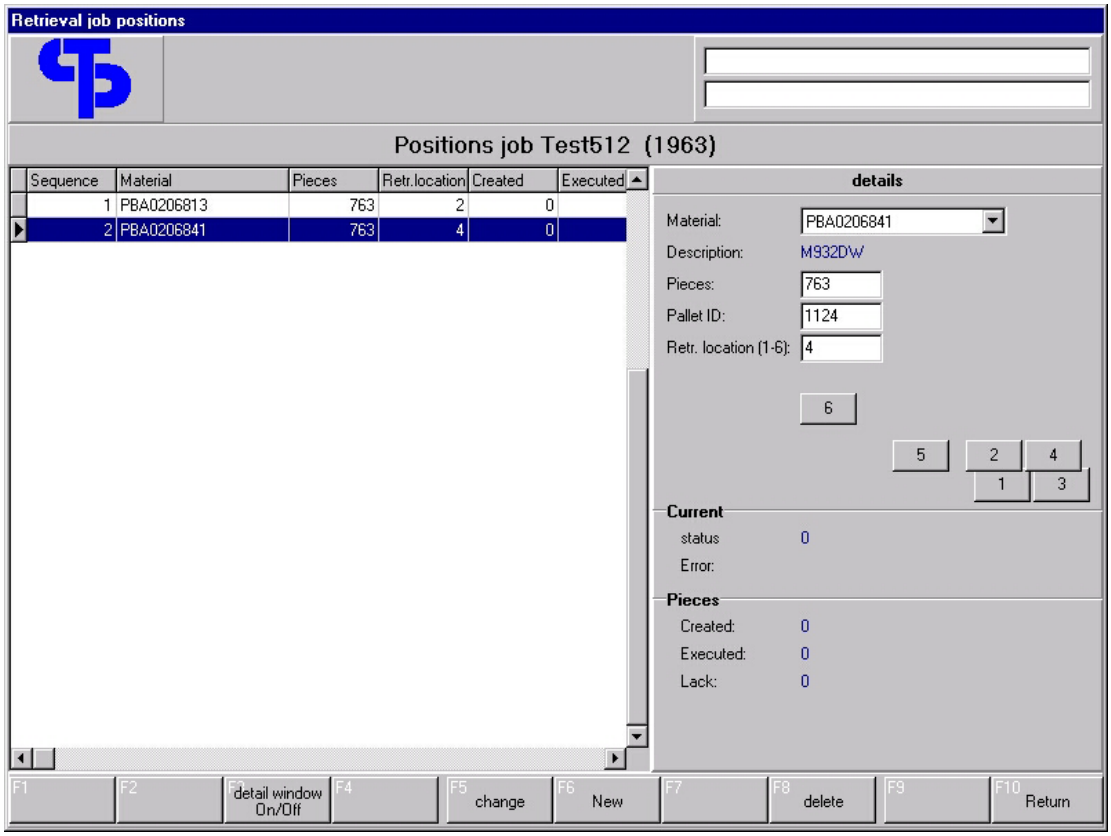


Fig. 14: Retrieval job, positions

The retrieval location can be entered or selected by pressing the related button (1-6).

For the pallets to be retrieved the source location is determined automatically. If several locations are possible the most convenient location is determined along various criteria (quantity, age of boards/papers, etc.). It is also possible, to select a particular pallet by pressing F6 (pallet selection) while entering the data in the detail window.

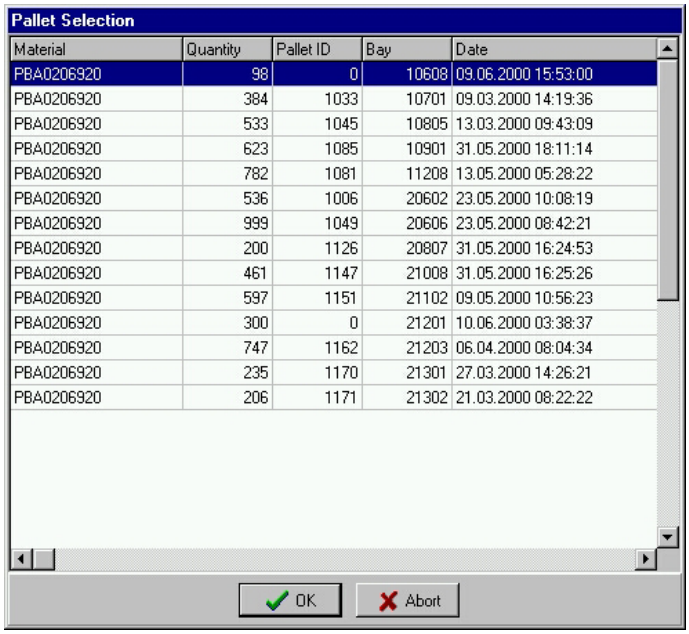


Fig. 15: Retrieval job position, pallet selection

6.3 Enabling a retrieval job

After entering the positions the job may be activated when quitting the respective screen.

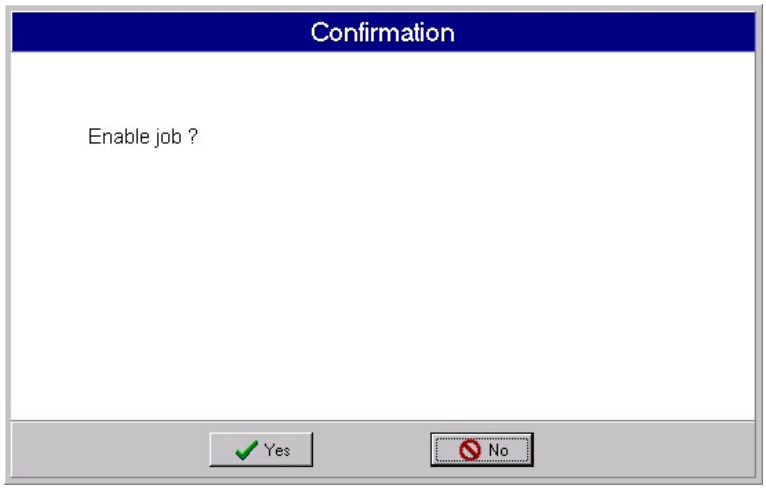


Fig. 16: Enabling a retrieval job

If this question is answered with "Yes" a verification is carried out as to whether the requested boards are available in sufficient quantities. If this is not the case, messages will be displayed accordingly and the job will be / will remain disabled.

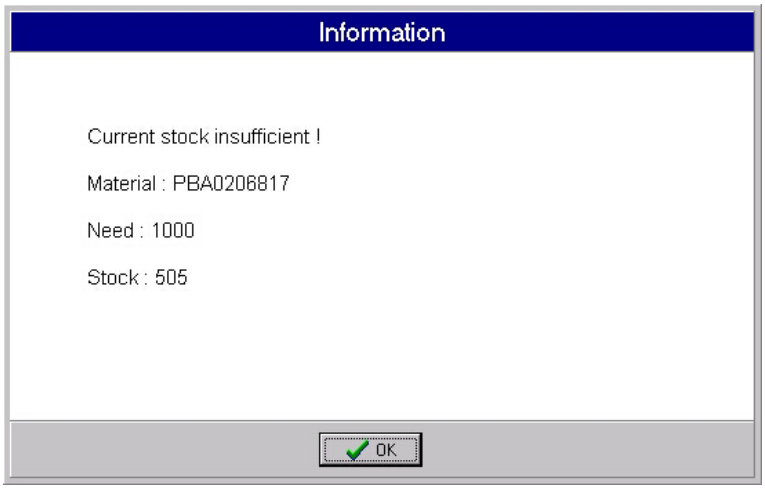


Fig. 17: Insufficient material

After the pallet has been retrieved to the storage and retrieval location, the stack is transported to the respective external locations and the data is transmitted to the higher-level system.

6.4 Storing from storage location

In order to enter the data for a pallet to be stored, select the respective location and enter the stock editor with <Enter>. Here data can be entered manually.

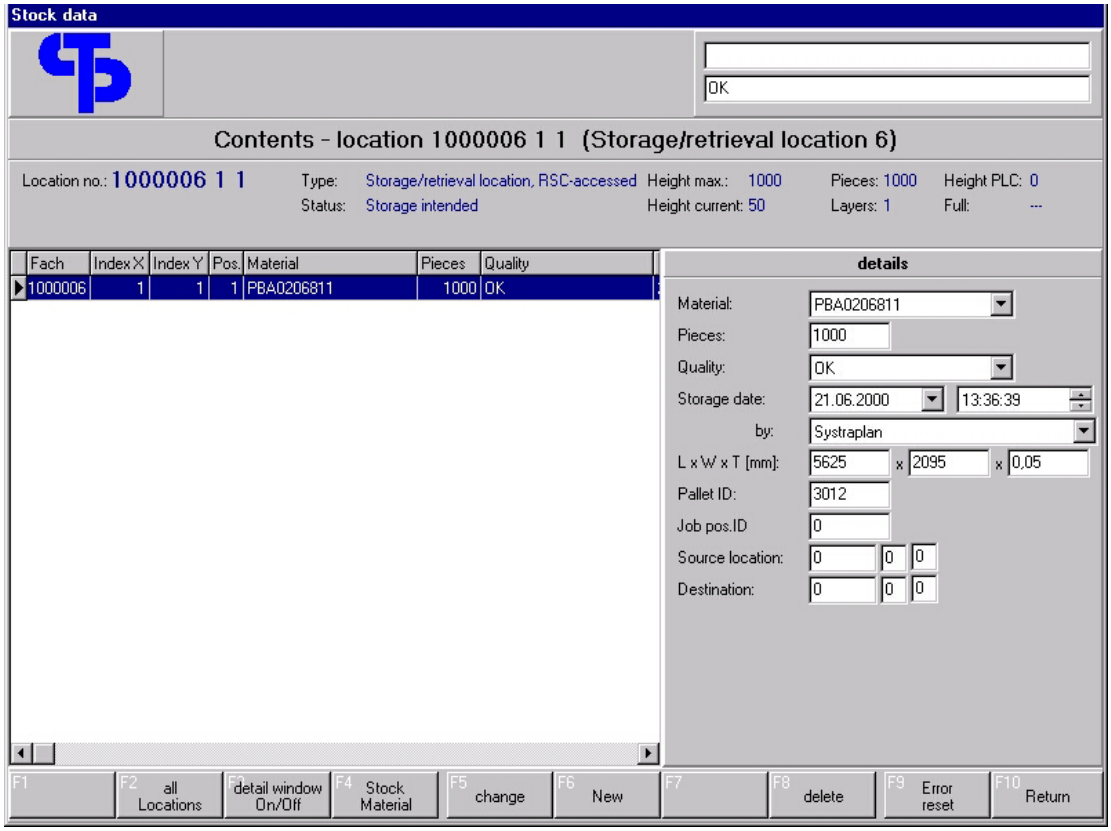


Fig. 18: Contents of storage location

When quitting the storage screens it is necessary to decide what is to happen with the pallet. The selected process is entered as a status in the storage / retrieval location (see store locations → status):

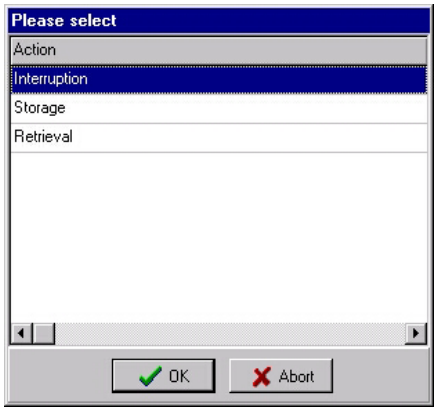


Fig. 19: Selecting the storage process

If "Storage" job has been activated in the Work menu (F2), the jobs for the RSC loader are generated automatically.

For locations 1.2, 2.2, 3.2 and 4.2, stack data is provided by the higher-level system and adopted automatically. The stacks are then forwarded to locations 1.1, 2.1, 3.1 or 4.1 and put into storage automatically.

6.5 Stock shifting

Stock can be shifted within the store in case of store re-organisation, or in order to take boards that were stored under a wrong number to the right location. The material, group and storage type assignments of locations and materials are of no significance for stock shifting. The responsibility for the transportation jobs lies with the operator and requires adequate knowledge.

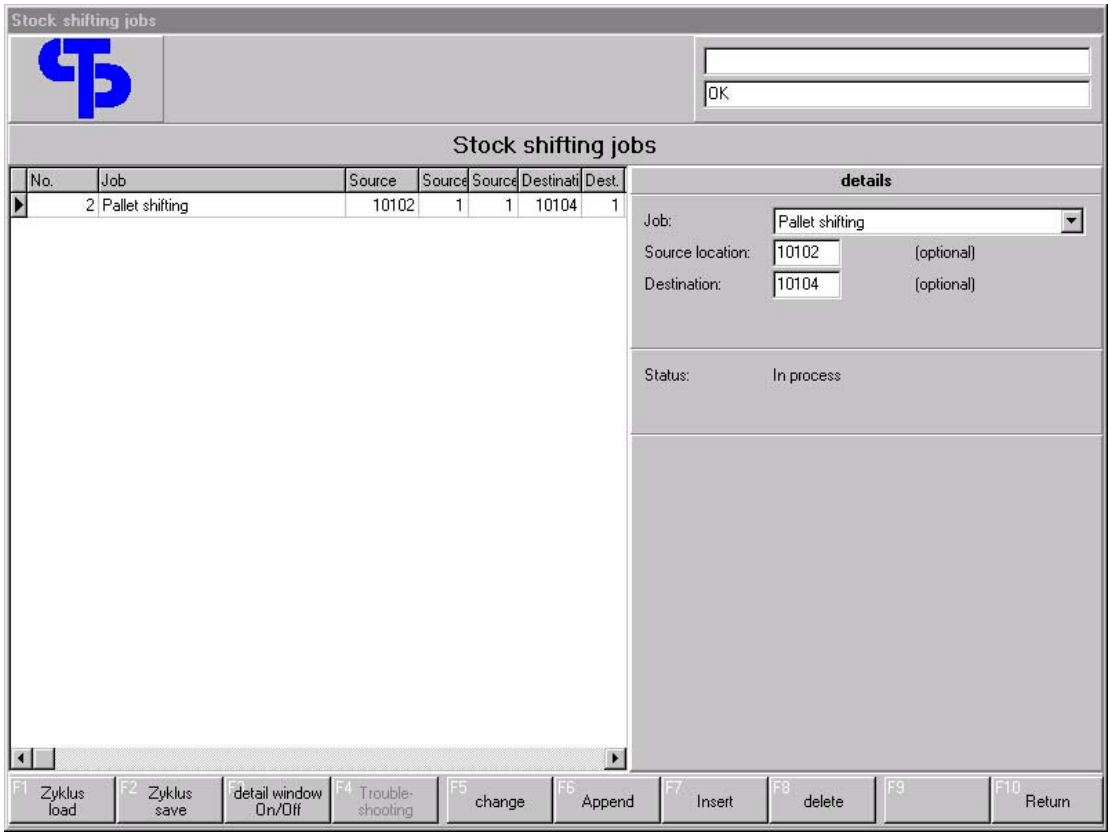


Fig. 20: Stock shifting

Also, when creating stock shifting jobs no verification takes place as to the number of items present on the concerned locations. Rather, at the time of execution all the PLC jobs are created and tested for possible execution just before the start only.

The shifting jobs are organised in a chart. An option is provided of adding jobs to the end of the list, inserting them at the current position, to edit and delete them.

Editing is possible only if the respective job has not started running yet. The current status is shown in the detail window.

The entire chart can be saved as a cycle and re-loaded later.

When creating a stock shifting job, first the type of shifting needs to be selected. Depending on this, further information is necessary (source location, target location, no. of items, etc.). The following types of shifting jobs are available:

6.5.1 Storing a pallet from storage/retrieval location

Data to be entered: Source location
Target location (optional)

A pallet located on the respective storage / retrieval location is transferred to the RSC forks and then delivered to the store location as stated. If the target location is indicated as "0", then the target location is determined automatically.

6.5.2 Pallet storage, forks

Data to be entered: Target location

The pallet currently on the fork is delivered to the store location as stated.

6.5.3 Pallet retrieval from storage/retrieval location

Data to be entered: Source location (optional)
Target location

The pallet present on the source location is transferred to the RSC forks and delivered to the storage/retrieval location as stated. If the source location is indicated as "0", the pallet is directly retrieved from the RSC forks.

6.5.4 Pallet shifting

Data to be entered: Source location (optional),
Target location (optional)

A pallet is taken out from the source location and delivered to the target location. If no source location is stated, the pallet will be taken directly to the target location on the forks. If, on the other hand, no target location is indicated, the pallet will only be transferred onto the forks out from the bay.

7 PLC interface

All PLC jobs are organised in a chart. Once a job has been completed it is entered into the job history automatically and stored here for approximately 60 days. This means that all job data (PC and PLC) are still available long after the job is over and are available for diagnosis and trouble shooting.

In addition to this it is possible to view the PLC variables necessary for communication with the PLC on the store management PC. Also input/output circuitry and flags can be made visible on the PC.

7.1 PLC jobs

The PLC jobs are the lowest level of the store management software. Each retrieval or stock shifting job and each storage job causes the creation of at least one PLC job.

A PLC job is the smallest operational step to be executed by the RSC. It consists either of the transportation of a board or stack into the RSC or of the delivery of a board or a stack out from the RSC.

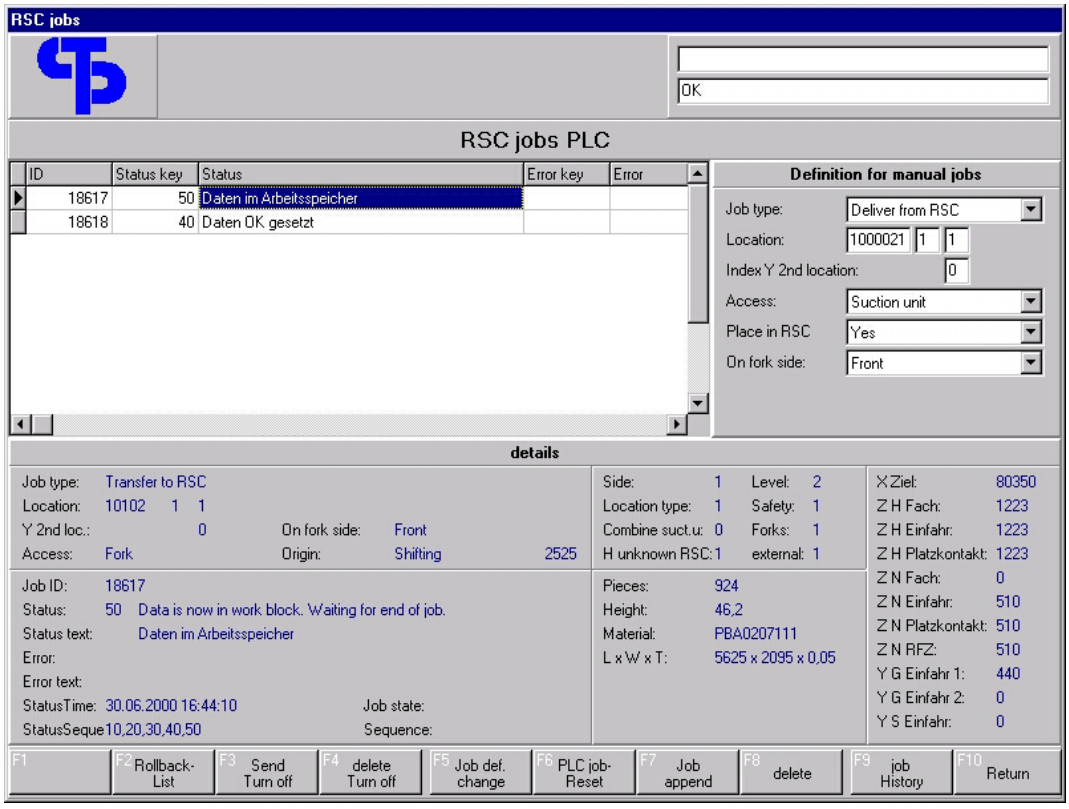


Fig. 21: PLC jobs

Each RSC job, including all data required for its execution, is stored and monitored in a chart. Its status can take different values in the course of the job process:

- 10 : Job defined. Waiting for data processing.
- 20 : Data processing completed. Waiting for transmission.
- 30 : Data transmitted to PLC. Waiting for OK flag.
- 40 : Data-OK flag set. Waiting for acceptance into working block.
- 50 : Data present in working block. Waiting for job end.
- 60 : Job finished, feedback messages read. Waiting for assessment.
- 90 : Error
- 100 : Job done

All successfully carried-out or manually deleted jobs (status 100) are sent to the job history and stored here for research purposes for several weeks.

If any malfunctions occur it is necessary, before restart, to call up the chart and check it (key F9 "RSC jobs PLC" in the Work screen). Jobs with error status must be deleted manually.

Before changing the chart all jobs in the Work screen should be de-activated. This measure prevents unintentional starting of previously created PLC jobs: as long as there is one incorrect job in the list (status 90), the execution of the following jobs is blocked. However, once this is deleted, the next job is enabled, transmitted to the PLC and started. To prevent this, the options in the Work menu should be re-activated only after a complete clearance of the PLC job chart.

In the case of machine fault not only the PLC job chart, but the rollback list as well should be checked and corrected if necessary (to call up, press F2).

7.2 Rollback list

After a job has been transmitted to the PLC successfully (status changes from 40 to 50), data for the board (or stack) to be moved is re-booked. So this happens before the actual transportation takes place. This means that the store assignment representation maintained in the PC shows the situation after the current PLC job has been completed. The purpose of this advance booking is to determine the next job on the basis of the new situation and to transmit it to the PLC. Therefore no time is wasted for the new job.

Should any problems occur while processing a job, e.g. if a pallet gets lost, then it must be possible to reset the bookings already carried out. For this reason the booked, but not yet completed jobs are entered into a "Rollback list".

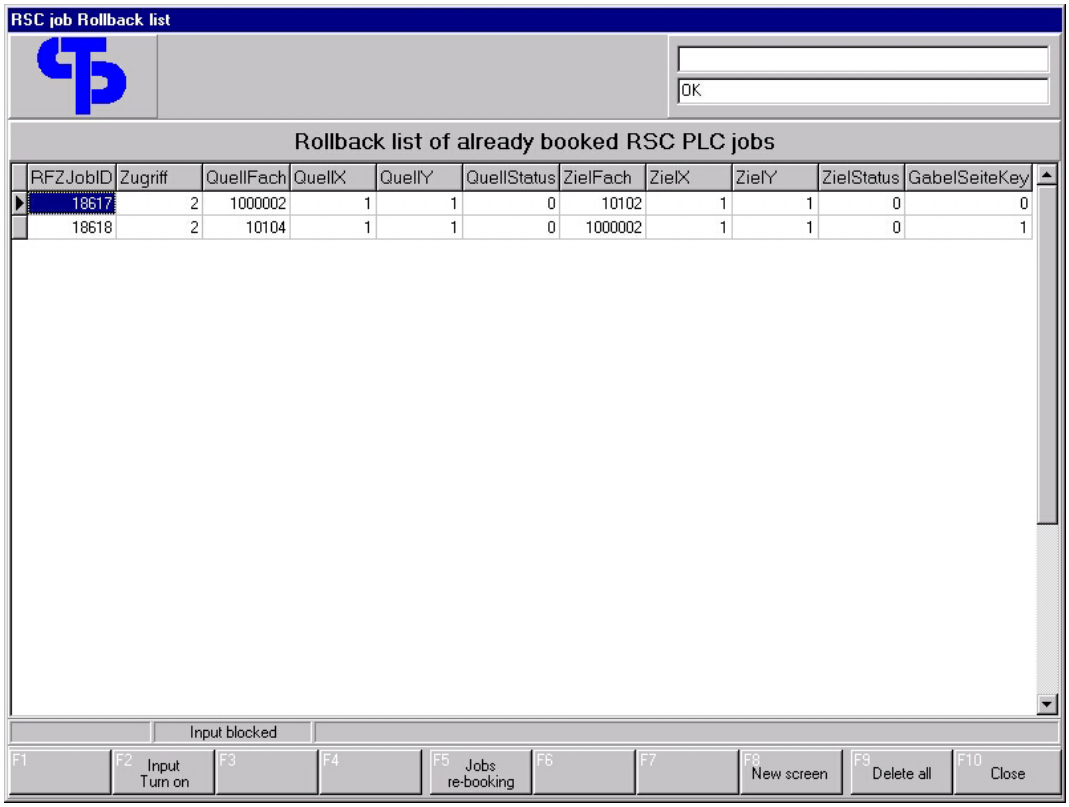


Fig. 22: Rollback list

The process of adding and deleting lines in the Rollback list is carried out by the program automatically. If a job is ended with an error the appropriate re-bookings take place automatically. In case of manual changes in the PLC job chart, however, the Rollback list also needs to be cleared (deleted). If no PLC jobs with a status > 40 exist, the Rollback list as well must not show any entries.

7.3 History of PLC jobs

The PLC job history holds the completed or manually deleted PLC jobs. This table can be used for evaluations or for analysing malfunctions. Apart from the actual job data for the PLC, also the underlying master data is stored. So it is possible, e.g. to determine which location co-ordinates were existing at the time the job was calculated.

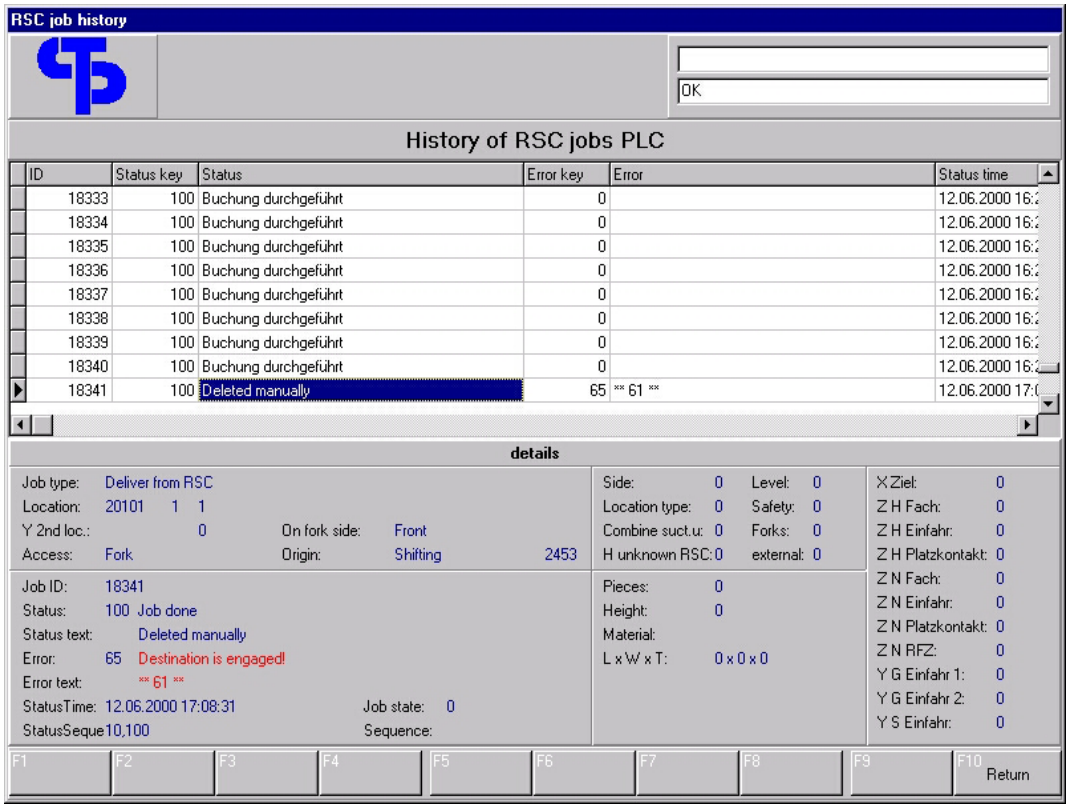


Fig. 23: Job history

Data is deleted from the job history automatically after approx. 60 days (adjustable).

7.4 PLC monitor

The integrated monitor provides access to the PLC variables used in the data exchange between the PC and the PLC at any time.

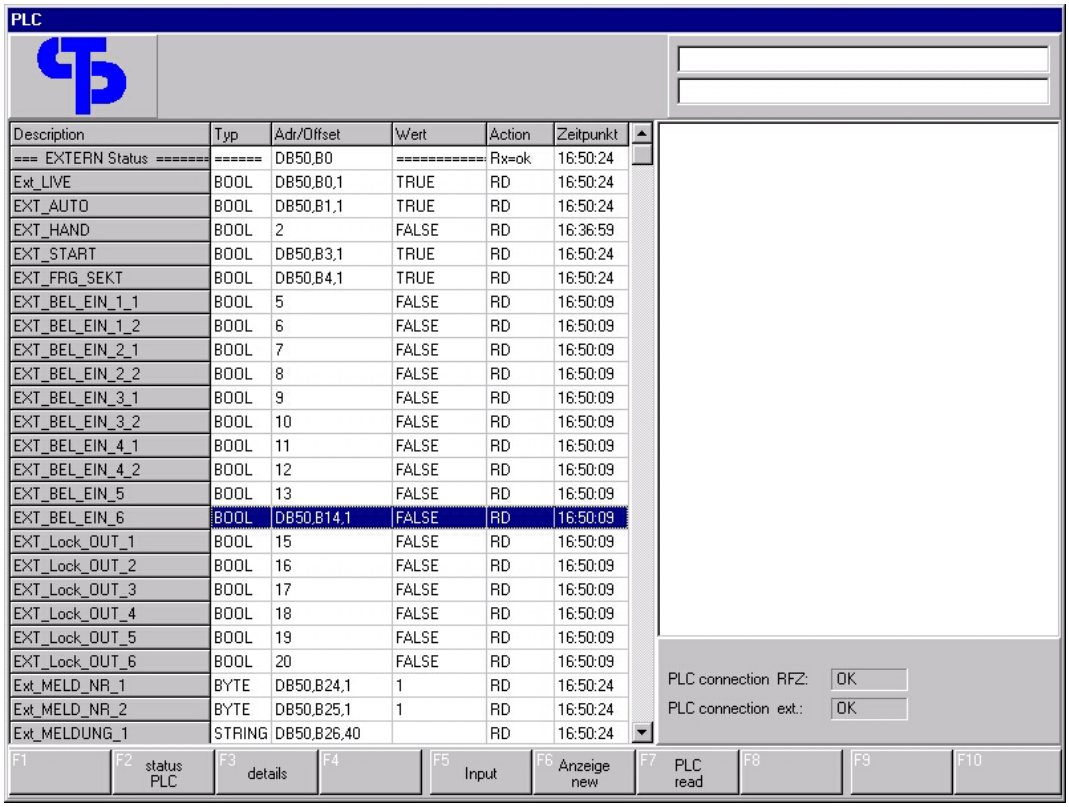


Fig. 24: PLC variables monitor

(to call up, press Shift/F6)

7.5 PLC display of input/output, flags

Input/output values and flags can be viewed at the store management PC. This function is highly useful for diagnosis and for solving operational problems (to activate, press Shift/F7).

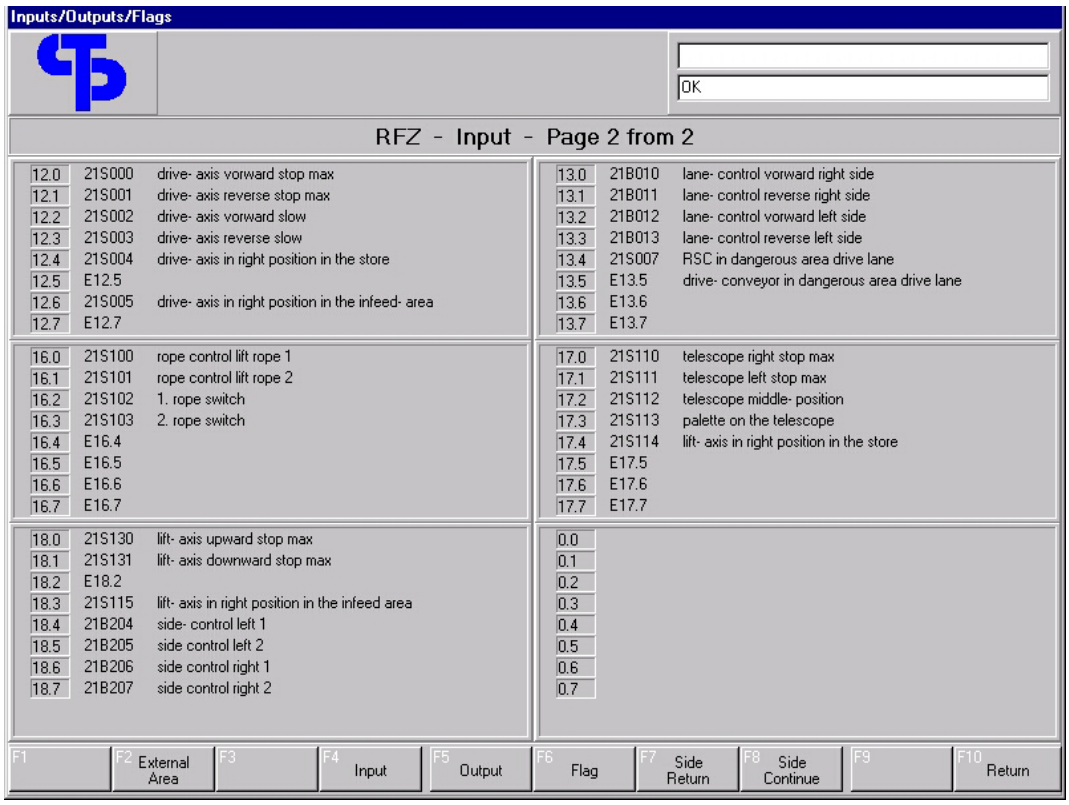


Fig. 25: PLC input values

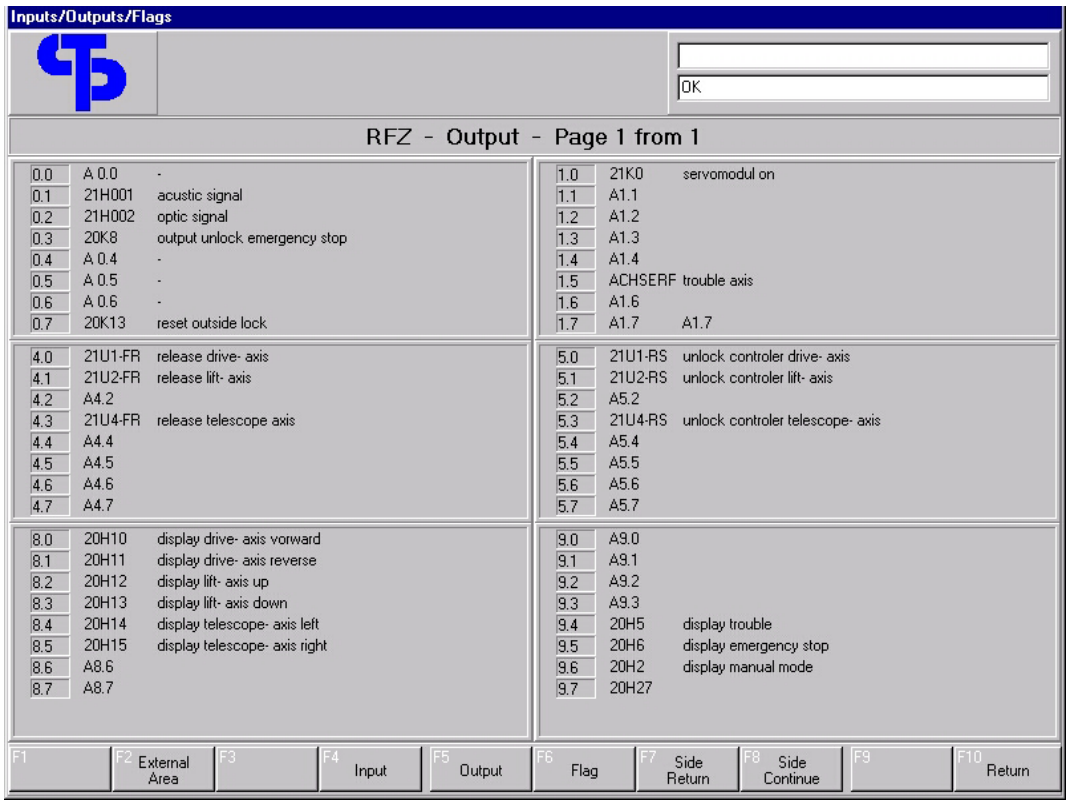


Fig. 26: PLC output values

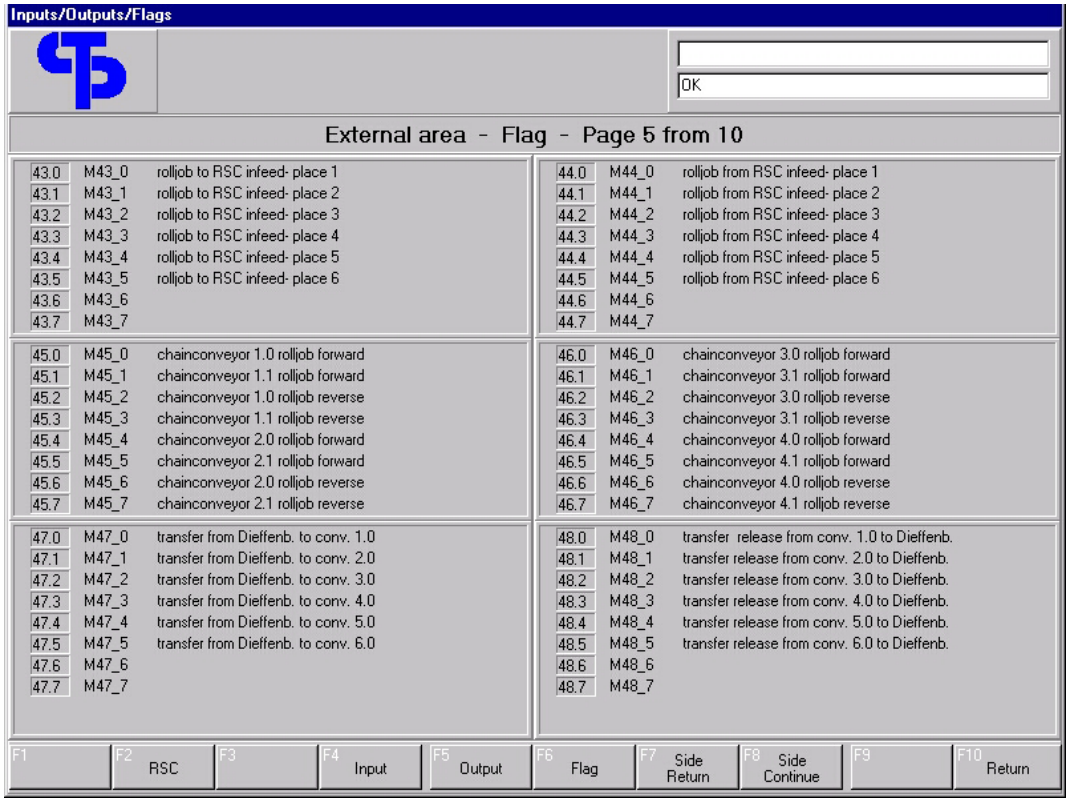


Fig. 27: PLC flags

8 User management

In the user management section, user rights can be assigned individually. A register of log-ins and log-outs is also included (to be called up via service programs).

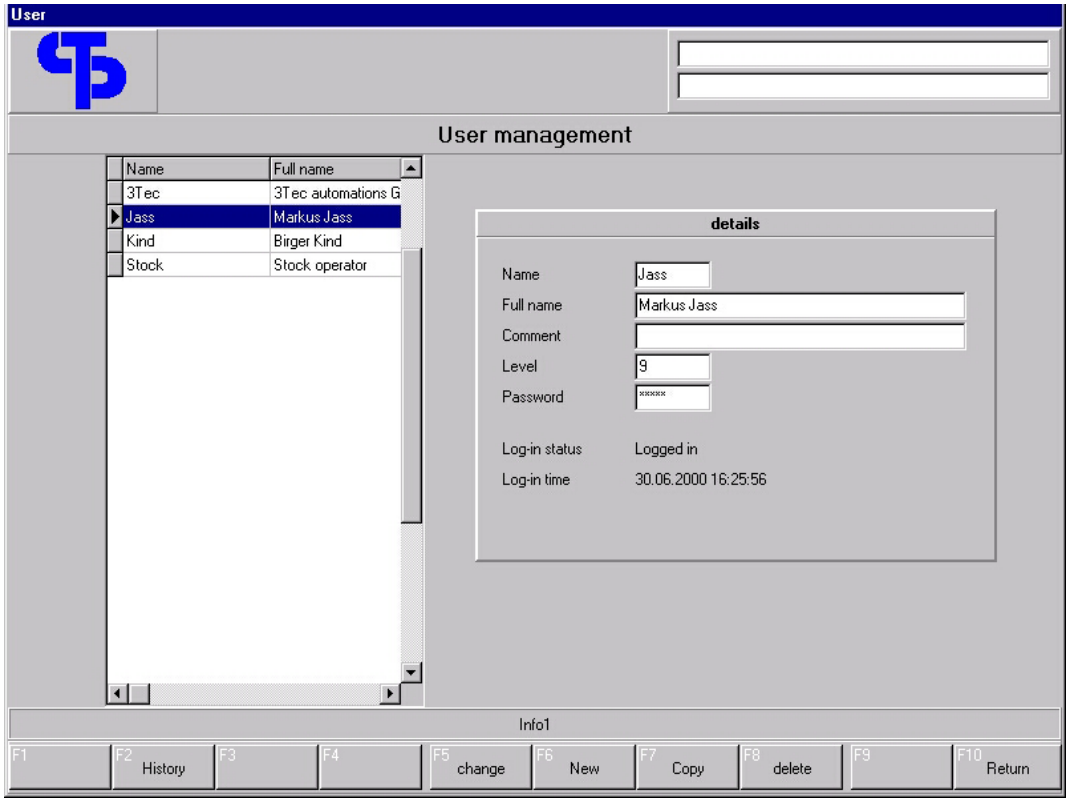


Fig. 28: User management

Users log in from the main screen. For this, names can be selected and a personal password must be entered. After this only such PC functions can be accessed as correspond to the password level (graded from 0 to 9).

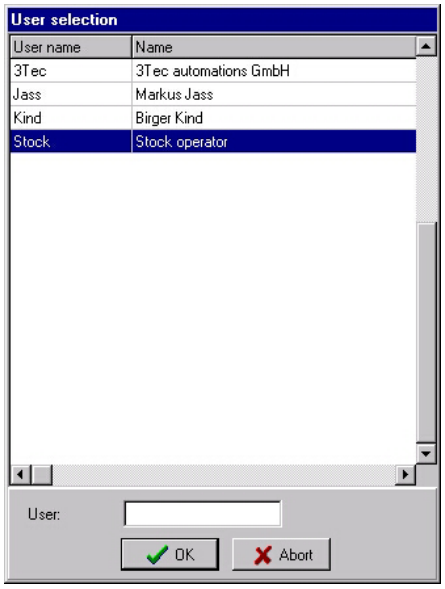


Fig. 29: User log-in

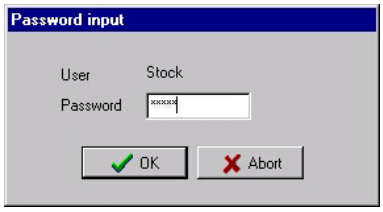
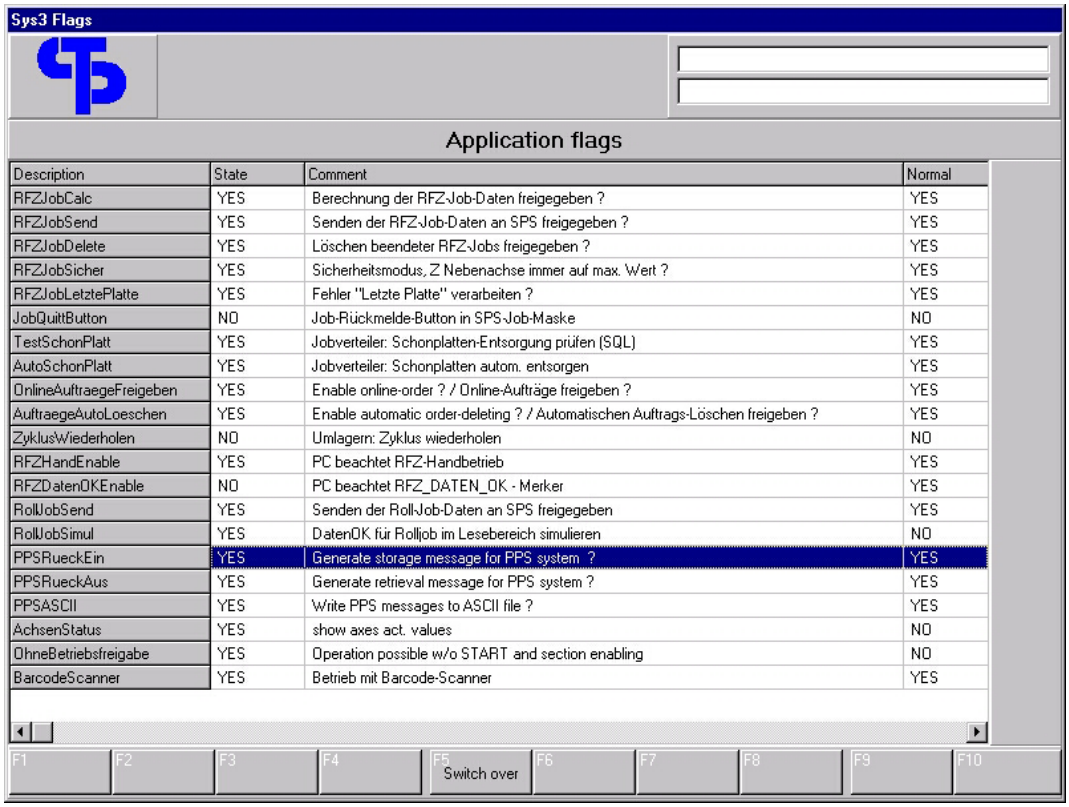


Fig. 30: Password entry

9 Program parameters

By using various program parameters, specific functions can be activated or de-activated. (to call up, press Shift/F8)



Description	State	Comment	Normal
RFZJobCalc	YES	Berechnung der RFZ-Job-Daten freigegeben ?	YES
RFZJobSend	YES	Senden der RFZ-Job-Daten an SPS freigegeben ?	YES
RFZJobDelete	YES	Löschen beendeter RFZ-Jobs freigegeben ?	YES
RFZJobSicher	YES	Sicherheitsmodus, Z Nebenachse immer auf max. Wert ?	YES
RFZJobLetztePlatte	YES	Fehler "Letzte Platte" verarbeiten ?	YES
JobQuittButton	NO	Job-Rückmelde-Button in SPS-Job-Maske	NO
TestSchonPlatt	YES	Jobverteiler: Schonplatten-Entsorgung prüfen (SQL)	YES
AutoSchonPlatt	YES	Jobverteiler: Schonplatten autom. entsorgen	YES
OnlineAuftraegeFreigeben	YES	Enable online-order ? / Online-Aufträge freigeben ?	YES
AuftraegeAutoLoeschen	YES	Enable automatic order-deleting ? / Automatischen Auftrags-Löschen freigeben ?	YES
ZyklusWiederholen	NO	Umlagern: Zyklus wiederholen	NO
RFZHandEnable	YES	PC beachtet RFZ-Handbetrieb	YES
RFZDatenOKEnable	NO	PC beachtet RFZ_DATEN_OK - Merker	YES
RollJobSend	YES	Senden der Roll-Job-Daten an SPS freigegeben	YES
RollJobSimul	YES	DatenOK für Rolljob im Lesebereich simulieren	NO
PPSRueckEin	YES	Generate storage message for PPS system ?	YES
PPSRueckAus	YES	Generate retrieval message for PPS system ?	YES
PPSASCII	YES	Write PPS messages to ASCII file ?	YES
AchsenStatus	YES	show axes act. values	NO
OhneBetriebsfreigabe	YES	Operation possible w/o START and section enabling	NO
BarcodeScanner	YES	Betrieb mit Barcode-Scanner	YES

Fig. 31: Program parameters

10 Scanner

The data of new pallets on storage/retrieval location 6 can be received from a barcode scanner connected to the 2nd Systraplan-PC. The received codes can be checked by pressing Shift/F3.

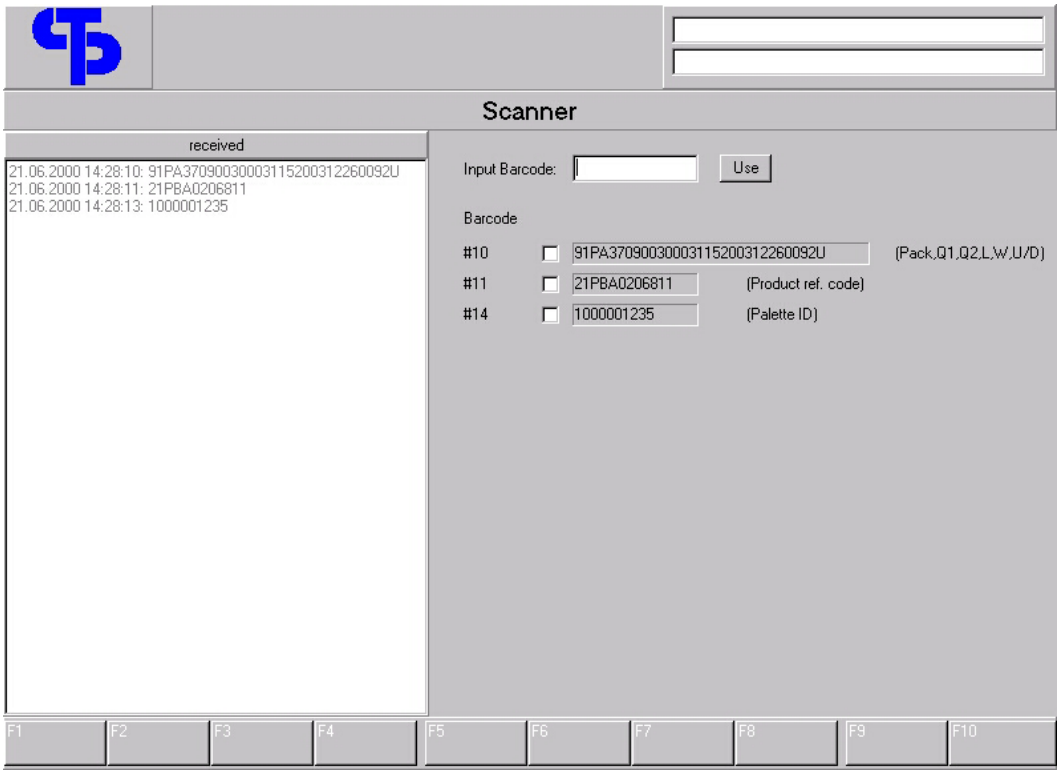


Fig. 32: Barcode scanner

11 Service programs

11.1 Start

To start the programs press softkey F9 in the main menu. Now the other functions may be activated.

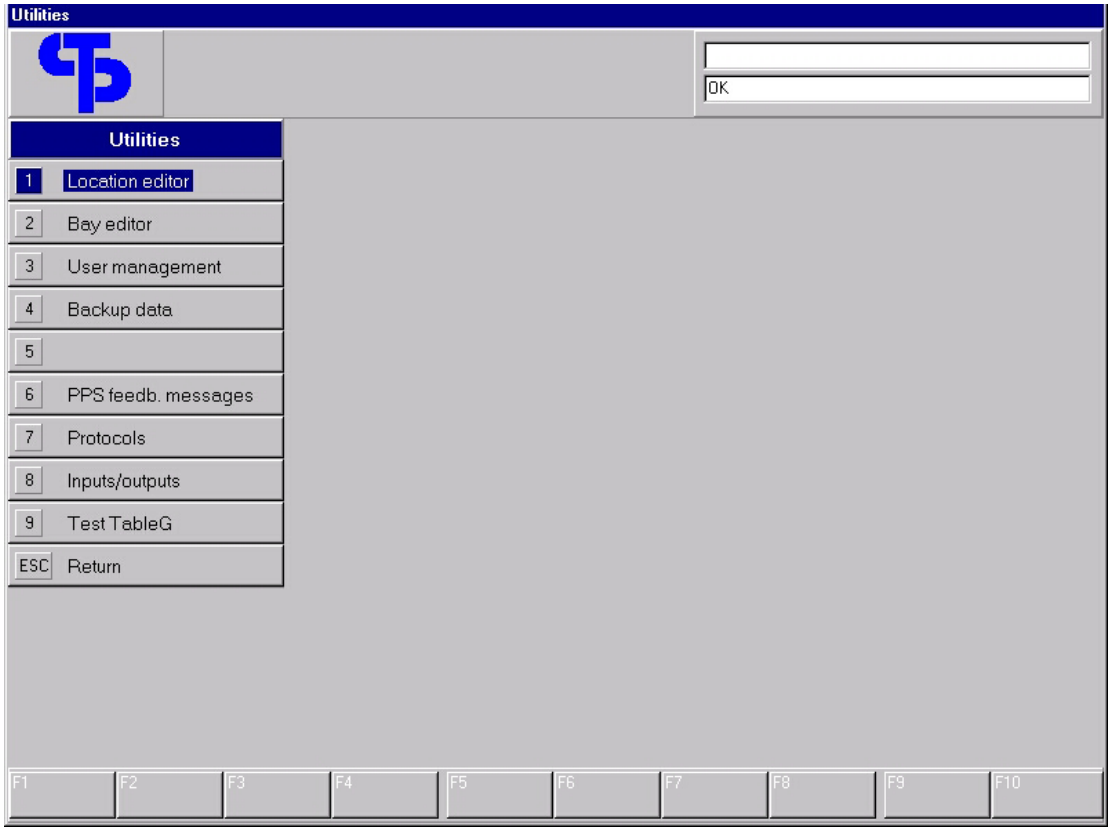


Fig. 33: Service programs

11.2 Storage bay editor

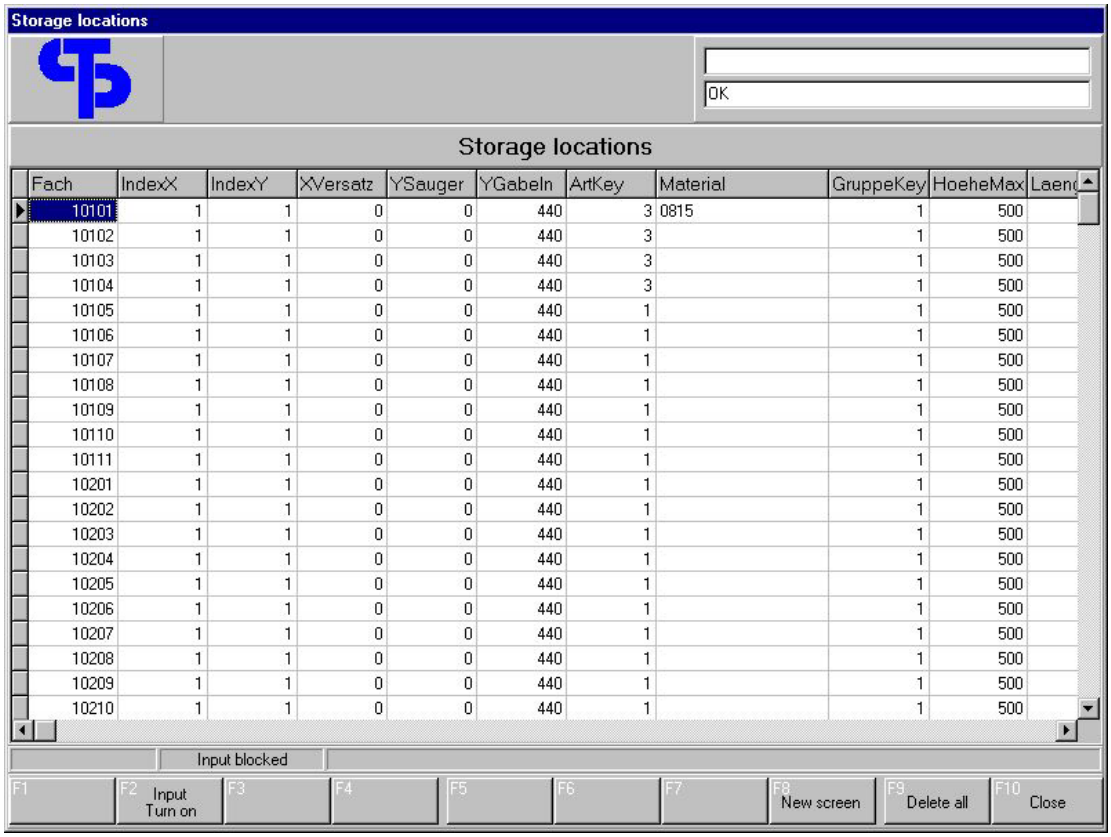
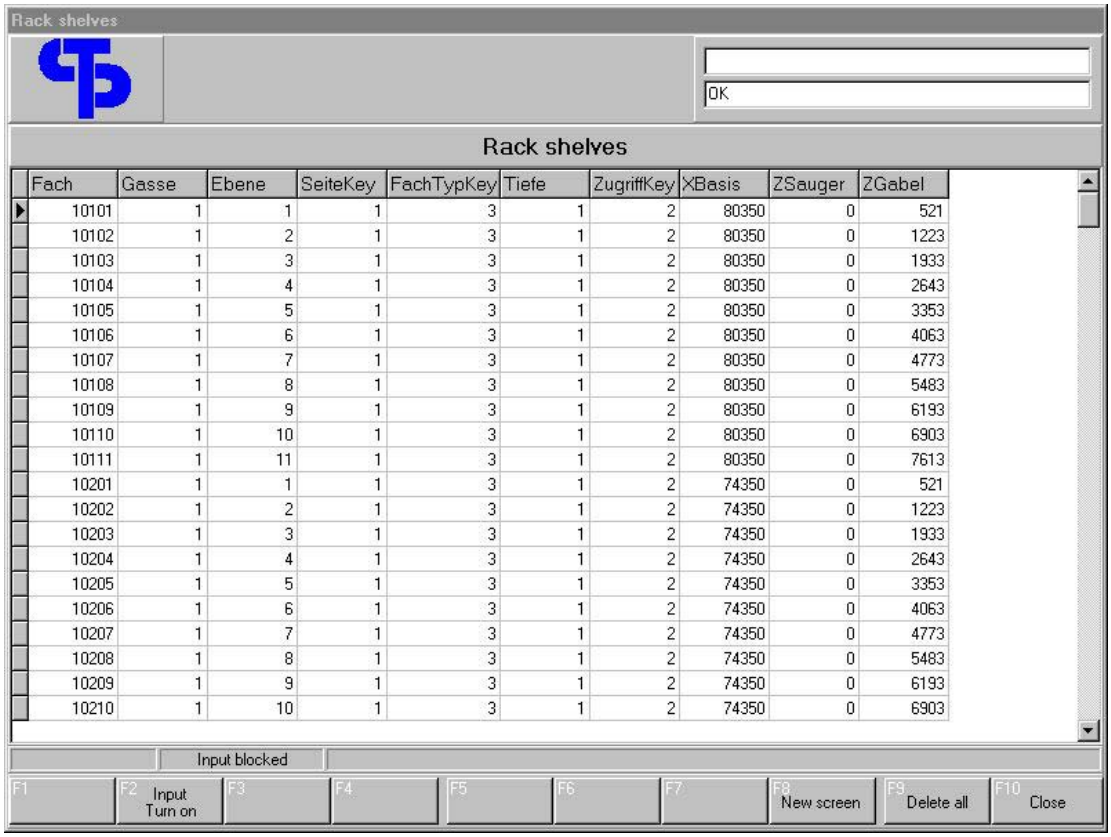


Fig. 34: Editor for storage bays

Here the entire data stock for all bays can be edited. This function should be used by trained staff only. Any changes to the bay master data should only be made via the form "Storage bays" (see 5.4).

11.3 Store location editor



Fach	Gasse	Ebene	SeiteKey	FachTypKey	Tiefe	ZugriffKey	XBasis	ZSauger	ZGabel
10101	1	1	1	3	1	2	80350	0	521
10102	1	2	1	3	1	2	80350	0	1223
10103	1	3	1	3	1	2	80350	0	1933
10104	1	4	1	3	1	2	80350	0	2643
10105	1	5	1	3	1	2	80350	0	3353
10106	1	6	1	3	1	2	80350	0	4063
10107	1	7	1	3	1	2	80350	0	4773
10108	1	8	1	3	1	2	80350	0	5483
10109	1	9	1	3	1	2	80350	0	6193
10110	1	10	1	3	1	2	80350	0	6903
10111	1	11	1	3	1	2	80350	0	7613
10201	1	1	1	3	1	2	74350	0	521
10202	1	2	1	3	1	2	74350	0	1223
10203	1	3	1	3	1	2	74350	0	1933
10204	1	4	1	3	1	2	74350	0	2643
10205	1	5	1	3	1	2	74350	0	3353
10206	1	6	1	3	1	2	74350	0	4063
10207	1	7	1	3	1	2	74350	0	4773
10208	1	8	1	3	1	2	74350	0	5483
10209	1	9	1	3	1	2	74350	0	6193
10210	1	10	1	3	1	2	74350	0	6903

Fig. 35: Editor for store locations

Here the entire data stock for all store locations can be edited. This function should be used by trained staff only. Any changes to the location master data should only be made via the form "Store locations" (see 5.5).

11.4 Logbook management

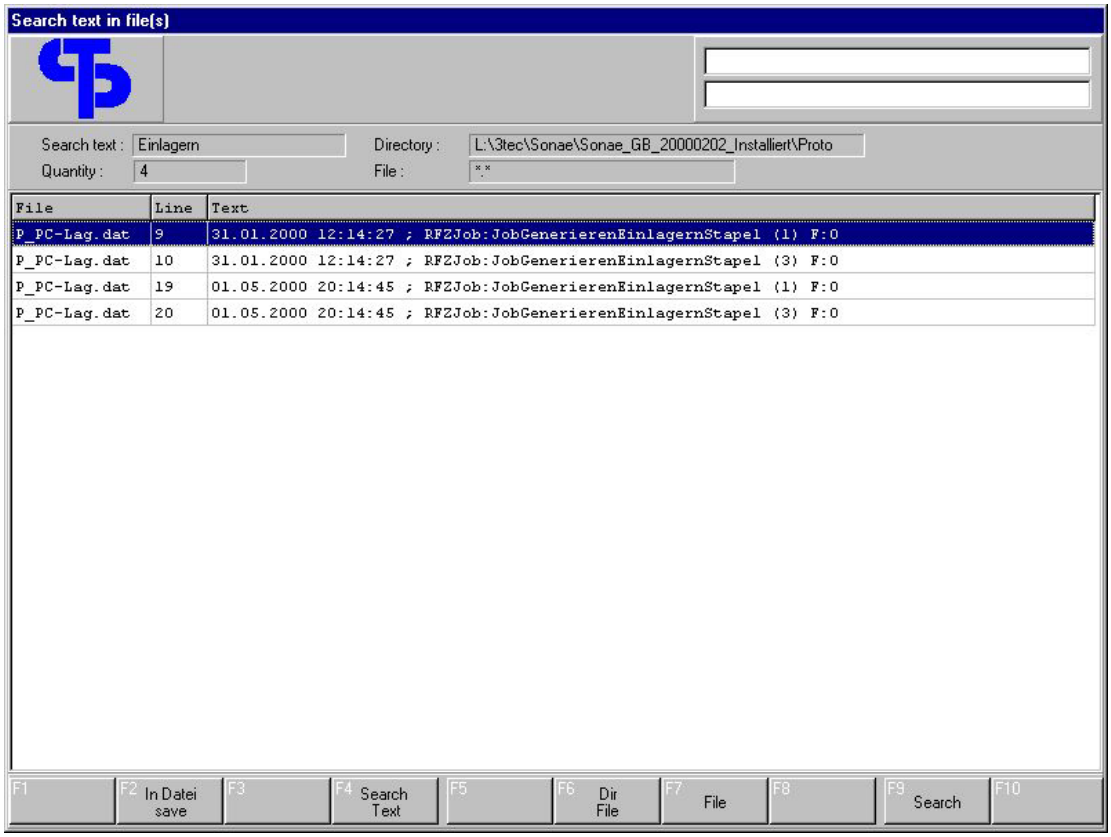


Fig. 36: Logbook editor

This screen provides a function which allows the log files to be scanned for individual terms.

12 Table of illustrations