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Training BPS X9

User Training

- **Operator Training**
  - 1 week

- **Customer Specific Training**
  - Customer Specified
  - Duration: customer dependent

Technical Training

- **Basic Technical Training**
  - 4 weeks

- **Basic Technical Compact Training**
  - 3 weeks

- **Update Training for BPS 2000 Specialists**
  - 2 weeks

- **Advanced / Customer Specific Training**
  - Duration depends on selected module(s)

**Available Modules**

- Machine Service: tbd
- Sensor System Analysis and Troubleshooting: tbd
- Adaptation Support Tools: tbd
- Software Installation and Backup: tbd
- Database: tbd
- On Site Inspection and Maintenance: tbd
- Customer Specified: duration customer dependent
- Interfacing to CutLink X: tbd
- Interfacing to NotaPack: tbd
- PE check: tbd
- Remote Access: tbd
BPS X9 – Operator Training

Pre-requisites: Basic technical knowledge
Duration: 1 week / 5 training days
Participant’s max.: 6
Training goals: After completion of this training the participant will be self sufficient in the operation and banknote processing of the BPS X9
Notes: Due to the site dependent process particularities, this training is to be held on-site. For sites unknown to the trainer, a site inspection is required to analyse customer specific requirements and processes (on-site; duration: one day).
This training can be held according to customer’s rotating shift schedule.

Curriculum:

Week 1: System Operation

Welcome and organisational information about training
Training overview
BPS System tasks: Counting, sorting, authenticity testing
Structure of the system: Counting Machine (CM), Quality Inspection Control Center (QICC), peripheral components
Explanation of concepts
QICC Control Center (CC)
Operation manuals
Starting up the Counting Machine (CM) and processing banknotes
Single stop, emergency stops
Error handling
Jam recovery
Power failure
Consumables replacement
BPS X9 – Basic Technical Training

Pre-requisites: Refer to the “Skills Assessment BPS X9 Maintenance” document
Duration: 4 weeks / 20 training days
Participant’s max.: 6
Training goals: After completion of this training the participant will be self-sufficient in the repair and maintenance of the BPS X9 in the areas mechanics, electrics, electronics, and pneumatics

Curriculum:

Week 1: Operating the system
Welcome and organizational information about training
Training overview
Safety Instructions
BPS system tasks: counting, sorting, authenticity testing
Structure of the system: Counting Machine (CM), Quality Inspection Control Center (QICC), peripheral components
Explanation of concepts, Production Order
QICC, Control Center (CC) / CC Plug-Ins
Starting up the CM and processing banknotes
Operating Controls
Cleaning, Replacing Consumables
Singler stop, emergency stops
Reports and logs, printouts
Jam Recovery
Power failure (Component Failure Recovery)

Weeks 2 and 3: Theoretical fundamentals
Functionality of the Loading module, carrier transfer
Functionality of the Input module, Feeding Assembly, Singler, Transport Section, Sensor Section
Functionality of the Base Module, Sensor Section
Functionality of the Reject Module, Reject Handling
Functionality of the Delivery Module, Stackers, Banders, Bundlers
Functionality of the Shredder Module, Special Stacker, Audit Stacker
Automatic flap doors
Pneumatics (air distribution system)
Electrical overview, Power Supply, UPS
Control and synchronization signals (Machine Clock, Single Zero)
Main Controllers (SCS, MPC)
Module Controllers (LMC, IMC, BMC, STC, GPC, BPC, SRC),
Controller communication, data buses
Connecting to a network
Software recovery
Control Center (CC)
Banknote Analyzer

Weeks 3 and 4: Maintenance and adjustment works
Maintenance manual
CC Adjustment Plug-In
Service Report
Removal and replacement of assemblies
Disassembly, assembly and adjustment of the singler
Adjustment of banders and bundlers
Gate replacement
Stacker synchronization and adjustment
Adjustment of actuators
Signal tracking
I/O ports, detector and actuator control
Analyzing sensor failures
Fault tracing and trouble shooting
Preventive and scheduled maintenance
BPS X9 – Basic Technical Compact Training

Pre-requisites: Refer to the “Skills Assessment BPS X9 Maintenance” document
Duration: 3 weeks / 15 training days
Participant’s max.: 4
Training goals: The participant will receive knowledge of the technical system BPSX9 and the interaction of the components. He will be self-sufficient in troubleshooting and maintain the BPS X9.

Difference to Basic Technical Training:
Fewer participants, less basics, focus on understanding the whole system, tools for troubleshooting and less disassembling parts.

Curriculum:

Week 1: Operating the system

- Welcome and organizational information about training
- Training overview
- Safety Instructions
- BPS system tasks: counting, sorting, authenticity testing
- Structure of the system: Counting Machine (CM), Quality Inspection Control Center (QICC), peripheral components
- Explanation of concepts, Production Order
- QICC, Control Center (CC) / CC Plug-Ins
- Starting up the CM and processing banknotes
- Operating Controls
- Cleaning, Replacing Consumables
- Singler stop, emergency stops
- Reports and logs, printouts
- Jam Recovery
- Power failure (Component Failure Recovery)

Weeks 2: Functionality of Modules, Control Center, Service Tools

- Functionality of the Loading module, carrier transfer
- Functionality of the Input module, Feeding Assembly, Singler, Transport Section, Sensor Section
- Functionality of the Base Module, Sensor Section
Functionality of the Reject Module, Reject Handling
Functionality of the Delivery Module, Stackers, Banders, Bundlers
Functionality of the Shredder Module, Special Stacker, Audit Stacker
Software architecture
Software Tools
Software installation
Recovery
Service Tools in SW
Service Tools in HW
Log files, Reports, Analyses
Typical error scenarios
Control Center (CC)

Weeks 3: Adjustments and troubleshooting, Service Tools

CC Adjustment Plug-In
Service Report
Removal and replacement of assemblies
Disassembly, assembly and adjustment of the singler
Adjustment of banders and bundlers
Gate replacement
Stacker synchronization and adjustment
Fault tracing and trouble shooting
Typical error scenarios
BPS X9 – Update Training for BPS2000 specialists

Pre-requisites: The technical training is intended for BPS2000 specialists.

Duration: 2 weeks / 10 training days

Participant’s max.: 6

Training goals: The participant will receive knowledge about the differences between the BPS2000 system and the BPSX9 in the areas of operation, hardware and software. After the training, he will be self-sufficient in operate, repair and troubleshoot the BPS X9.

Curriculum:

Week 1: Operation and software

Operation
- Banknote Processing
- Production Order
- System Error

Control Center
- Plug Ins
- Customer Tools
- Service Tools

Software
- Overview System Software
- Software Tools
- Installation
- Recovery

Week 2: Hardware

Theory
- Design Features
- System Architecture
- General Improvements
Modules
Sensor Basics
Controllers and Interfaces
Subsystem QICC2-PC
Subsystem MPC
Sensor Subsystem
Subsystem Real Time Control
Hardware
Software
Sections
Service Schema / Service Key
Practice:
Identify the differences to BPS2000
Reports and Logs
CC Plugins
Main topics from manual Adjustment procedures
Main topics from Repair manual
Installation and removal of the shredder with test
Nota Master Image Training

- **Basic Nota Master Image Training**
  - Duration: 2 weeks

- **Update Training for OBIS 3 Specialists**
  - Duration: 2 days

- **Advanced / Customer Specific Nota Master Image Training**
  - Duration: 1 – 2 weeks
  - Duration depends on customer requirements

Activities:
- Practical work
- Working with advanced features
- Question and answers
BPS X9 – Nota Master Image Basic Training

Pre-requisites: Refer to the “Skills Assessment BPS X9 document
Duration: 2 weeks / 10 training days/ 60 hours
Participants' max.: 4
Training goals: The emphasis placed in the training measures depends on the previous knowledge and skills of the participants, so that durations given here for the individual training modules must be regarded as approximate only.

A detailed breakdown can be provided with knowledge of participants' previous qualifications as appropriate to their future roles. Course targets, content and duration are adapted accordingly. This means that concrete offers are drawn up and submitted by the responsible training personnel in accordance with the respective customer's requirements.

Curriculum:

Hardware and Software

System Overview

- Hardware components
- Electrical connections
- Link to the BPS X9

Introduction to the Optical Inspection System User Interface (OISUI)

- Main Menu
- Online and offline operation
- Adjustment mode, calibration mode and production mode

Adjustment Works

- Alignment of camera optics and adjustment of focus
- Acquisition parameters
- Brightness adjustment, camera gains
- Flat field correction (FFC)
- Correction of lens distortion (CLD)
- Upload of the calculated parameters, extra gain
Recording and storage of banknotes

Banknote storage
Memory buffers: continues, marked from machine and marked from NMI

Basics of banknote inspection

Basic inspection sequence
Master banknote and training set, selective training set
Inspect tree: structure, inspection sequence and hierarchy
Inheritance of inspection items

Working with the OISUI Software

Inspection of banknotes
Inspect tree, edit window, result list and analysis window

Creating an adaptation

Determination of the training set
Training set administration
Brightness normalisation
Size / Alignment
Cut inspection
Layer principle
Denomination layer
Geometrical normalisation of prints by using tie points
Working with projection regions
Inspection regions and editing of inspect region parameter sets
Masking of optical unstable areas (e.g. reflecting foils)
Serial number inspection
Scaling parameters and measurements
Use of transfer points
Use of auxiliary points
Denomination layer
Use of variable print characteristics (VPC)
Statistic regions
Online operation

Verification of the adaptation
Training regions
Error zones and production statistics
Blob analysis and error weighting
Result history and history setup
Upload of parameter set

Practical works

Opportunity to create own adaptation
BPS X9 – Nota Master Image Update Training for OBIS 3 specialists

Pre-requisites: Very good knowledge of building OBIS 3 adaptations including fine-tuning, field experiences and production ramp-up. Skilled application of all available inspects items and clear know-how about adaptation structure and philosophy.

Duration: 2 days
Participants’ max.: 4

Training goals: After successful participation of this training the participants will be able to create and maintain NMI-adaptations for any denomination using the advanced NMI features.

The training is intended for OBIS 3 specialists mainly coming from OBIS 3 Vx.20 or lower and who need to apply their expertise to NMI with its advanced features. Since some of these features are also implemented in OBIS 3 Vx.22 the training covers partly the upgrade to the OBIS 3 version.

Equipment: Every participant should have his/her PC/Notebook available, either their own ones (WIN7 /administrator rights required) or provided by G&D. Software and dongle provided by G&D.

Curriculum:

Hardware and Software

- System Overview
- Hardware components and installation
- Software components
- Handling
- New connection of OBIS to machine
- Camera calibration and adjustment

Adaptation tool (OISUI)

Offline

- Wizard to initiate adaptation
- Automatic creation of reference brightness region
- Import of measurements into adaptation tool
- Only one definition of adaptation orientation
- Only one scaling of master banknote
- Synchronization of edit window and inspect tree
Automatic creation of parameter sets for inspect regions
Detailed definition of quality check in serial number inspection
More robust search for VPCs and tie points
Assisted mode for fine-tuning through minimization of tuning elements and automatic interaction with error function parameters
Projection regions, statistic regions and brightness regions show expected results already for master banknote
Quick navigation to detected errors
Check for adaptation errors in inspect regions
Multiple selections in result list
Assessment and classification for cutting errors
Change of singling orientation when replacing (and resizing) master banknote
Saving and inserting features
New outline search
Conversion OBIS 3 adaptation to NMI

Online
New index administration for denominations (HEX ID)
New dialogue for saving raw data
New management for unfit banknotes (OBIS and machine)
Management of dynamic properties and their publication

Features to be activated by SW-key or dongle
DifferenceOfMeasures_Obis4
ExtendedErrorZoneResults_Obis4
ProductionStatistics_Obis4
SavingOfAnalysisImages_Obis4
SavingOfFeatures_Obis4
SerialNumberSorting_Obis4
SpecialVerticalScratchFeature_Obis4
TrainingRegions_Obis4

OBIS PC
Windows 7

Questions / Clarification
BPS X9 – Advanced Training OBIS 3/ Nota Master Image

Pre-requisites: Good knowledge of building OBIS 3 / NMI rough adaptations and skilled application of all available inspect items.

Duration: 5 - 10 days according to customization

Participants’ max.: 4

Training goals: After successful participation of this training the participants will be able to prepare an OBIS/NMI adaptation for production. This includes advanced fine-tuning for false unfit rate reduction and supervision while production ramp-up.

The training is intended for OBIS 3 / NMI specialists who attended the respective basic training and who are able to carry out rough adaptations. The objective of this training is to prepare the participants for collecting dedicated field experiences including fine-tuning and production ramp-up, i.e. targeted reduction of false unfit rates and creation of appropriate production environment. The training can be tailored according to customers’ needs and requirements.

Equipment: The training is preferably held at customer’s premise since production environment is needed for realistic knowledge transfer regarding the afore-mentioned targets. Classroom with projector.

Curriculum:

Brief Repetition and Answering Questions
- Repetition of adaptation rules and inspection elements
- Opportunity of clarification of questions and knowledge gaps
- Discussion of existing customer adaptation (if necessary)

Practical work with OBIS / NMI at BPS2000 resp. BPS X9 under G&D supervision
- Camera adjustment and calibration (focus, angle, position)
- ACQ parameters, camera gain, FFC, CLD
- Visual evaluation of images
- Proper selection of training set banknotes
- Raw data recording
- Fine-tuning according to customer standard
- Developing methodology for reduction of false unfit rate
- Ensuring detection of defects according to calibration set or customer QC
- Distinction of region parameter modification vs. training set extension
- Techniques to identify region parameters for changes and how to modify them
- Techniques to identify banknotes to be included to selective training set
Working with Advances Features

- Difference of measures
- Extended error zone results
- Production statistics
- Saving of analysis images
- Saving of features
- Serial number sorting
- Special vertical scratch filter (if applicable)
- Training regions
BPS X9 – Adaptation Training/ Serial Number Definition

Adaptation Training BPS X9

Adaptation Training

Duration: 1 – 2 weeks

Hardware and Software
Beginning an adaptation from a template
Sensor adaptation
NSCMAG, FLP, M10,SIL, other sensors
GSL Designer
Configurator
Recording raw data
Installation of deployment

Serial Number Definition Adaptation Training

SNDEF

Duration: 2 weeks

Tools and installation
Principles of banknote numbering
Principle of serial number processing
Partition groups
Examples
# BPS X9 Adaptation Training

**Prerequisites:** Good knowledge of banknote features to be inspected in the framework of banknote printing works machine sorted finishing. The participants should be familiar with the operation of Windows-based PC systems. Basic knowledge of digital image processing is advantageous.

**Achievement:** After successful participation of this training the participants will be able to create and maintain X9-adaptations (deployment) for any denomination. This includes standard sensor adaptations as well as the configuration of all necessary machine settings.

**Duration:** The duration of the training depends on the sensor equipment as required by the customer. A training for the complete sensor equipment is scheduled for 2 weeks (10 days). The total time required for the training can be calculated from this schedule. Times indicated in red are mandatory; times indicated in blue are optional.

**Participants:** maximum 4

**Equipment:** Every participant should have his/her PC/Notebook available, either their own ones (WIN7 /administrator rights required) or provided by G&D. Software and dongle provided by G&D.

### Hardware and Software

<table>
<thead>
<tr>
<th>Component</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Overview</td>
</tr>
<tr>
<td>Hardware components</td>
</tr>
<tr>
<td>Software components</td>
</tr>
<tr>
<td>Software installation</td>
</tr>
<tr>
<td>Handling</td>
</tr>
<tr>
<td>Recommended file structure</td>
</tr>
</tbody>
</table>

**2 days**

### Beginning an adaptation from a template

- Control Center for the configurator
- Loading configurator project and prepare template
- Control Center for the adaptation tool and the GSL Designer
- Adding AlgoDefinitions for adaptation
- Rawdata Management

### Sensor adaptation

<table>
<thead>
<tr>
<th>Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBIS</td>
</tr>
<tr>
<td>DIS</td>
</tr>
<tr>
<td>SNC</td>
</tr>
<tr>
<td>NSCMAGL</td>
</tr>
</tbody>
</table>

- NSCMAGLHough
- NSCMAGLPrint
- Clip function for improved serial number evaluation
- Verification of soft magnetic print
- NSCMAGLMultiCode
- Example of a MultiCode thread

**0.5 days**

<table>
<thead>
<tr>
<th>Sensor</th>
</tr>
</thead>
<tbody>
<tr>
<td>NSCMAGL</td>
</tr>
</tbody>
</table>

- no M10

**3 days**
## Training BPS X9

- Definition of the thread coding
- Diagnosis of evaluation results
- Important output properties
- Setting length threshold
- Further properties to check coded threads for completeness
- Checking Consecutive (non-coded) threads for completeness
- NSCMAGL_BLDenolIndep

### Resources

<table>
<thead>
<tr>
<th>Flavour</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>M10</td>
<td>no NSCMAG</td>
</tr>
<tr>
<td>SIL</td>
<td></td>
</tr>
<tr>
<td>Other sensors</td>
<td></td>
</tr>
</tbody>
</table>

### GSL Designer

- Editing bounds
- Editing variables
- Setting activators
- Setting switches
- Setting thresholds

### Configurator

- Importing sensor adaptation
- Sensor settings
- Selection of properties to be used in sensor reporting
- Property settings
- Set stacking modes
- Short machine (DM1)
- Long machine (DM2DM1)

### Recording rawdata

- 0.5 days

### Installation of deployment

### Questions / Clarification

- 1 day
- Maximum: 10 days
Serial Number Definition Adaptation Training

Prerequisites: The Serial Number Definition requires a very good knowledge of building algorithms combined with a profound mathematical background. Basic knowledge of C-language is advantageous. Furthermore, the participants should be familiar with the operation of Windows-based PC systems.

Achievement: After successful participation of this training the participants will be able to create and modify serial definition files according to the required numbering scheme. The training conveys furthermore a number of examples taken from real applications which cover most numbering sequences. These examples can then be modified to the actual use case.

Duration: 10 days
Participants: maximum 4
Equipment: Every participant should have his/her PC/Notebook available (WIN7), either their own ones or provided by G&D.

Tools and Installation
- Notepad++
- Dev-Cpp Compiler
- Test Tool For Serial Number Definition File
- Recommended File Structure

Principles of Banknote Numbering
- Basic Parameters
- Some Serial Number Structures
- Serial Number With Lot Number
- Serial Number With IPP Number
- Serial Number With Denomination Code And No Position Number
- Serial Number Sequence
- Sequence Mode
- Batch Mode
- Batch Mode With Position Numbers
- Batch Mode Without Position Numbers

Principle Of Serial Number Processing
- Serial Number Processing In The BPS
- Organization Of An Adaptation Buffer (SNDEF)
- General Denomination Related Description
- Partitioning Of the Serial Number
- Serial Number Processing Using Variables For Sheet And Position Numbers (e, b
- Serial Number Conversion from ASCII to the Binary Format (intern)
Serial Number Conversion from the Binary Format to ASCII
Serial Number Processing Using the Variable For BNID
Serial Number Conversion from ASCII to the Binary Format (intern)
Serial Number Conversion from The Binary Format To ASCII

Partition Groups
Serial Number Partition Description
Partition Group Part_Lot_Offset (1st SN)
Lookup Table
Several Lookup Tables
Returning The Lookup Table Index
Returning The Lookup Table Value
Searching Lookup Table Value And Returning The Index
Partition Group Part_Intern_ascii
Partition Group Part_ascii_Intern

Examples
Checksum Modulo 9 (Euro Banknotes)
Batch Mode
Using Full Range Of Available Characters In The Serial Number
Start Offset At Lot Start
Start Offset Other Than Lot Start
Start Offset At Lot Start With Different Lot Size

Training BPS 2000

Operator Training

- **Operator Training**
  - 1 week

Technical Training

- **Basic Technical Training**
  - 4 weeks

- **OBIS 3 Training**
  - 2 weeks

**Customer Specific Training**

- Customer Specified

...to comply with customer’s needs contents and duration are to be discussed by customer and BNPO Training Center...
BPS 2000 – Operator Training

<table>
<thead>
<tr>
<th>Pre-requisites:</th>
<th>Basic technical knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration:</td>
<td>1 week</td>
</tr>
<tr>
<td>Participants max.:</td>
<td>6</td>
</tr>
<tr>
<td>Training goals:</td>
<td>After completion of this training the participant will be self sufficient in the operation and banknote processing of the BPS 2000</td>
</tr>
<tr>
<td>Notes:</td>
<td>Due to the site dependent process particularities, this training is to be held on-site. For sites unknown to the trainer, a site inspection is required to analyse customer specific requirements and processes (on-site; duration: one day). This training can be held according to customer’s rotating shift schedule.</td>
</tr>
</tbody>
</table>

Curriculum:

**Week 1: System Operation**

- Welcome and organisational information about training
- Training overview
- BPS System tasks: Counting, sorting, authenticity testing
- Structure of the system: CP, QICC/MIC
- Explanation of concepts, SSO, SV, OP, FE, Shift, IPP, Pile Mode / Continuous Mode, OPA, OPB, OPBP, OPP
- QICC / MIC: SV Menu, OP Menu
- Operation manuals
- Starting up the Currency Processor (CP) and processing banknotes
- Singler stop, emergency stops
- Error handling
- Jam recovery
- Power failure
- Consumables replacement
BPS 2000 – Basic Technical Training

Pre-requisites: Refer to the “Skills Assessment BPS 2000 Maintenance” document
Duration: 4 weeks
Participants max.: 6
Training goals: After completion of this training the participant will be self sufficient in the repair and maintenance of the BPS 2000 in the areas mechanics, electrics, and pneumatics

Curriculum:

Week 1: Operating the system

Welcome and organisational information about training
Training overview
BPS System tasks: Counting, sorting, authenticity testing
Structure of the system: CP, QICC/MIC, for bank version: MIS
Explanation of concepts, SSO, SV, OP, FE, Shift, IPP, OPP, Deposit, Batch, Reel, Pile Mode / Continuous Mode (dependent on customer requirements).
QICC / MIC: SSO Menu, SV Menu, OP Menu
Starting up the Currency Processor (CP) and processing banknotes
Singler stop, emergency stops
Reports and logs, printouts
Power failure
Consumables replacement

Weeks 2 and 3: Theoretical fundamentals

Components (detectors and actuators)
Transfer section loading module
Transfer section input module
Hoist system input module
Singler area
Singler principle
Transport section
Reject section
Delivery section
Banding
Training BPS 2000 ONLY at GD CT Iberia

Bundling
Special stacker
Shredder
Automatic flap doors
Pneumatics (Air distribution system)
Electrical overview
High Voltage Supply (HVS)
Low Voltage Supply (LVS)
Control- and synchronisation signals (MAP, SI0)
Module controllers (P-STG, LFC, PMC, DMC, SMC)
Signal tracking
I/O ports, detector and actuator control via monitor
Central unit hardware configuration (GWC/DBC, SYC, SEC and TRC, interfaces)
Software installation, flash load
BN data set
Jams and analysis of the situation by using monitor commands
Most commonly used monitor commands of GWC/DBC, SEC, TRC, SYC
Bank version only: Manual Inspection Station (MIS)
Removal and replacement of assemblies
QICC (Quality Inspection Control Center)

Weeks 3 and 4: Maintenance and adjustment works

Maintenance manual and safety instructions
Disassembly, assembly and adjustment of the singler
Adjustment of banders and bundlers
Gate adjustment
Stacker synchronisation and adjustment
Response time measurement and adjustment of actuators
Analysing sensor failures
Fault tracing and trouble shooting
Preventive and scheduled maintenance
OBIS3 TRAINING

Prerequisites:
Duration: 2 weeks (10 working days/60 hours)
Participants: max.: 3
Training Goals: The emphasis placed in the training measures depends on the previous knowledge and skills of the participants, so that durations given here for the individual training modules must be regarded as approximate only.

A detailed breakdown can be provided with knowledge of participants’ previous qualifications as appropriate to their future roles. Course targets, content and duration are adapted accordingly. This means that concrete offers are drawn up and submitted by the responsible training personnel in accordance with the respective customer's requirements.

Curriculum:

Hardware and Software

System Overview
Duration: 4 hours

- Hardware components
- Electrical connections
- Link to the BPS 2000

Introduction to the Optical Inspection System User Interface (OISUI)
Duration: 3 hours

- Main Menu
- Online and offline operation
- Adjustment mode, calibration mode and production mode
Adjustment Works

Duration: 6 hours

Alignment of camera optics and adjustment of focus
Creation of acquisition parameters
Flat field correction (FFC)
Correction of lens distortion (CLD)
Upload of the calculated parameters

Recording and storage of banknotes

Duration: 2 hours

Memory buffer marked and continuous

OBIS setup parameters

Duration: 1 hour

Adaptation

Basics of banknote inspection

Duration: 3 hours

Master banknote and training set, selective training set
Inspection tree: structure, inspection sequence and hierarchy
Inheritance of inspection items

Working with the OISUI Software

Duration: 4 hours

Inspection of banknotes
Inspection tree, result and graphical window
Blob analysis and error weighting

Creating an adaptation and train in of parameters

Duration: 26 hours

Determination of the training set
Layer principle and inspect regions
Brightness normalisation
Inspection of border layers
Geometrical normalisation of prints by using tie points
Insertion of inspect regions and editing of parameter sets
Masking of optical instable areas (e.g. reflecting foils)
Use of transfer points
Working with projection regions
Serial number inspection
Insertion of measurements and scaling parameters
Use of auxiliary points
Working with denomination dependant regions
Use of variable print characteristics (VPC)
Inspection of banknote size, high running and skew
Statistic region

Miscellaneous

Duration: 3 hours
Verification of the adaptation
Error zones and production statistics
Result history and history setup
Upload of parameter set

Practical works

Duration: 8 hours
Opportunity to create own adaptation
Training BPS M7

User Training
These trainings only apply to users without BPS1000 experience

- Operator Training: 3 days
- Administrator Training: 3 days
- Supervisor/Manager Training: 2 days

Customer Specific Training
Customer Specified
duration customer dependent

Technical Training

- Basic Training: 3 weeks
- Update BPS1000 to BPSM7: 1 week
- BPS M7 Upgrade: 4 days

Customer Specific Training
Please choose one or more of the following

Possible Training Topics
Contact the G&D Training Dept for more information

- Machine Service: 5 days
- Sensor System Analysis and Troubleshooting: 3 days
- Administration Review: 1 day
- Jam Recovery: 1 day
- Software Installation and Backup: 2 days
- Database: 2 days
- On Site Inspection and Maintenance: duration customer dependent
- Customer Specified: duration customer dependent
BPS M7 Operator Training

Prerequisites: Refer to the “Skills Assessment BPS M7 User” document.
Duration: 21 hours (3 days)
Participants: 5 (max.)
Training aims: After completion of this training course, the participant will be self-sufficient in banknote processing on the BPS M7. They will also be able to identify and solve simple faults.

Training Contents

System overview

Input Module
Operating Module
Delivery Module
Shredder module
Compressed and Suction Air Supply
System start

Power on, log on, banknote processing and finish

Banknote processing

Recovery Procedure

Practical Exercises

End of training course
BPS M7 Administrator Training

Prerequisites: List of the “Skills Assessment BPS M7 User” document.
Duration: 21 hours (3 days)
Participants: 5 (max.)
Training aims: After completion of this training course, the participant will be self-sufficient in administration of the BPS M7 user rights list, user groups, creation and personalization of BPS M7 chip cards. They will also be able to identify and solve simple user access faults.

Training contents

System overview

System start

Power on, log on, banknote processing and finish

Menus

Banknote processing

Detailed banknote processing including reject handling

Administration

Chipcard handling and User Rights

End of training course
# BPS M7 Supervisor / Manager Training

<table>
<thead>
<tr>
<th>Prerequisites:</th>
<th>Refer to the “Skills Assessment BPS M7 User” document.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration:</td>
<td>14 hours (2 days)</td>
</tr>
<tr>
<td>Participants:</td>
<td>5 (max.)</td>
</tr>
<tr>
<td>Training aims:</td>
<td>After completion of this training course, the participant will be self-sufficient in banknote processing on the BPS M7. They will also be able to solve banknote recovery processes, interpret reports and logs, identify and solve simple operating failures.</td>
</tr>
</tbody>
</table>

## Training contents

### System overview

#### System start

- Switch on system
- Processing section

### Menu's

- Banknote Processing
- Reporting System
- Administration
- Configuration

### Additional options

### Unexpected events and Cleaning Procedures

### End of training
BPS M7 Basic Technical Training

Prerequisites: Refer to the “Skills Assessment BPS M7 Basic” document.
Notebook with WinXP Pro and administrator rights
- Ethernet cross link cable
- USB flash drive ≥ 8 GB

Duration: 3 weeks - approx. 100 Hrs.
Note: The training duration may be extended to 4 weeks if a translator is required. Please contact the training dept. for more information.

Participants.: 5 (max)

Training aims: After completion of this training, the participants will be self-sufficient in the repair, maintenance and troubleshooting of the BPS M7 with respect to the mechanical, electrical and pneumatic systems.

System overview

Specifications

Construction

Processing basics

System start and first operation
Banknote Processing complete
Reporting system

Main Menu

Configuration and Administration

Software Tools

Mechanical system

General components
Input module and singler
Operation module
Delivery module and stacker
Bundler unit
LDM and Coupling modules
Shredder unit
Pneumatic system
- BPS air system
- Air supply module

Electrical system
- Power Supply
- MPC Hardware
- Module controller
- Monitoring and control

Sensor system
- Sensor Computer System - SCS
- Sensors
- Measurement system

Software system
- Components
- Installation
- Backup and recovery
- Tools

System maintenance

Faults and Troubleshooting

End of training
Update BPS1000 to BPS M7 Technical Training

Prerequisites: Thorough knowledge of the BPS1000 machine. Notebook with WinXP Pro and administrator rights
- Ethernet cross link cable
- USB flash drive ≥ 8 GB

Duration: 1 week - approx. 35 Hrs.
Participants: 5 (max)
Training aims: Participants gain an in-depth understanding of all hardware and software differences to the BPS1000 machine.

System Overview

Description and Technical Data

Global Machine Modifications
- Mechanic
- Electric
- Pneumatic

Module Specific Modifications
- Input Module
- Operator Module
- Delivery Module
- Shredder Module

Software
- Structure
- Installation and Imaging
- Tools

Peripheral Devices
- Dust Suction Unit

Faults and Troubleshooting
BPS M7 Upgrade Technical Training

Prerequisites: Thorough knowledge of the BPS1000 machine. Notebook with WinXP Pro and administrator rights.
- Ethernet cross link cable
- USB flash drive ≥ 8 GB
Duration: 4 days - approx. 28 Hrs.
Participants: 5 (max)
Training aims: Participants gain an in-depth understanding of the BPS M7 IM/OM modules only.

System Overview

Description and Technical Data

Module Specific Modifications

Input Module
Operator Module

Software

Structure
Installation and Imaging
Tools

Peripheral Devices

Dust Suction Unit

Faults and Troubleshooting
Training BPS M5

User Training
These training only apply to users without BPS1000 experience

**Operator Training**
3 days

**Administrator Training**
3 days

**Supervisor/Manager Training**
2 days

**Customer Specific Training**
Customer Specified
duration customer dependent

Training BPS M5

Technical Training

**Basic Training**
3 weeks

**Update BPS1000 to BPSM5**
4 days

**Customer Specific Training**
Please choose one or more of the following

Possible Training Topics
Contact the G&D Training Dept for more information

- Machine Service: 5 days
- Sensor System Analysis and Troubleshooting: 3 days
- Administration Review: 1 day
- Jam Recovery: 1 day
- Software Installation and Backup: 2 days
- Database: 2 days
- On Site Inspection and Maintenance: duration customer dependent
- Customer Specified: duration customer dependent
BPS M5 Operator Training

Prerequisites: Refer to the “Skills Assessment BPS M5 User” document.
Duration: 21 hours (3 days)
Participants: 5 (max.)
Training aims: After completion of this training course, the participant will be self-sufficient in banknote processing on the BPS M5. They will also be able to identify and solve simple faults.

Training Contents

System overview

- Input Module
- Operating Module
- Delivery Module
- Shredder module
- Compressed and Suction Air Supply
- System start

Power on, log on, banknote processing and finish

Banknote processing

Recovery Procedure

Practical Exercises

End of training course
BPS M5 Administrator Training

**Prerequisites:** List of the “Skills Assessment BPS M5 User” document.

**Duration:** 21 hours (3 days)

**Participants:** 5 (max.)

**Training aims:** After completion of this training course, the participant will be self-sufficient in administration of the BPS M5 user rights list, user groups, creation and personalization of BPS M5 chip cards. They will also be able to identify and solve simple user access faults.

**Training contents**

**System overview**

- **System start**

**Power on, log on, banknote processing and finish**

- **Menus**

**Banknote processing**

- Detailed banknote processing including reject handling

**Administration**

- Chipcard handling and User Rights

**End of training course**
BPS M5 Supervisor / Manager Training

Prerequisites: Refer to the “Skills Assessment BPS M5 User” document.
Duration: 14 hours (2 days)
Participants: 5 (max.)
Training aims: After completion of this training course, the participant will be self-sufficient in banknote processing on the BPS M5. They will also be able to solve banknote recovery processes, interpret reports and logs, identify and solve simple operating failures.

Training contents

System overview

System overview

System start
Switch on system
Processing section

Menu's

Banknote Processing
Reporting System
Administration
Configuration

Additional options

Unexpected events and Cleaning Procedures

End of training
## BPS M5 Basic Technical Training

<table>
<thead>
<tr>
<th>Prerequisites:</th>
<th>Refer to the “Skills Assessment BPS M5 Basic” document. Notebook with WinXP Pro and administrator rights - Ethernet cross link cable - USB flash drive ≥ 8 GB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration:</td>
<td>3 weeks - approx. 100 Hrs. Note: The training duration may be extended to 4 weeks if a translator is required. Please contact the training dept. for more information.</td>
</tr>
<tr>
<td>Participants.:</td>
<td>5 (max)</td>
</tr>
<tr>
<td>Training aims:</td>
<td>After completion of this training, the participants will be self-sufficient in the repair, maintenance and troubleshooting of the BPS M5 with respect to the mechanical, electrical and pneumatic systems.</td>
</tr>
</tbody>
</table>

### System overview

#### Specifications

#### Construction

### Processing basics

#### System start and first operation

#### Banknote Processing complete

#### Reporting system

### Main Menu

#### Configuration and Administration

#### Software Tools

### Mechanical system

#### General components

#### Input module and singler

#### Operation module

#### Delivery module and stacker

#### Bundler unit

#### LDM and Coupling modules

#### Shredder unit
Pneumatic system
BPS air system
Air supply module

Electrical system
Power Supply
MPC Hardware
Module controller
Monitoring and control

Sensor system
Sensor Computer System - SCS
Sensors
Measurement system

Software system
Components
Installation
Backup and recovery
Tools

System maintenance

Faults and Troubleshooting

End of training
Update BPS1000 to BPS M5 Technical Training

Prerequisites: Thorough knowledge of the BPS1000 machine. Notebook with WinXP Pro and administrator rights
- Ethernet cross link cable
- USB flash drive ≥ 8 GB

Duration: 4 days - approx. 28 Hrs.
Participants: 5 (max)
Training aims: Participants gain an in-depth understanding of all hardware and software differences to the BPS1000 machine.

System Overview

Description and Technical Data

Global Machine Modifications
- Mechanic
- Electric
- Pneumatic

Module Specific Modifications
- Input Module
- Operator Module

Software
- Structure
- Installation and Imaging
- Tools

Peripheral Devices
- Dust Suction Unit

Faults and Troubleshooting
Nota Tracc L Technical Training

Prerequisites: Refer to the “Skills Assessment BPS M7 Basic” document.

Notebook (XP-Professional with full Admin Rights)

We do also recommend safety shoes for the participants

Duration: 4 Days - approx. 32 Hrs.

Note: The training duration may be extended to 5 Days if a translator is required. Please contact the training dept. for more information.

Participants.: 5 (maximum !!!)

Training aims: After completion of this training, the participants will be self-sufficient in the repair, maintenance and troubleshooting of the NotaTracc L Module with respect to the mechanical, electrical and pneumatic systems.

General Information

Day 1

Daily Schedule
Overview of training schedule and content
Training room security and safety

System overview

System Explanation
Operating Elements
Covers / Doors
Service Door
Slider

Introduction Trays
Sizes
Module Installation
Options: Separators; Cover; NFC-Chip; RFID-Card
Guiding Grooves
Lateral Hangers
System Start and Banknote Processing

Explanation of Functional Sequence
- Selection of Input and OP-Mode
- Operating elements
- Banknote processing with close Covers

Explanation of the BPS Interface including Connections and Changes in the Singler Area

Machine Connections / Modifications
- Mechanical Connection and Adjustment
- Power Connection; CAN-Bus
- Pressurized Air
- LCF Plate; additional Light Barrier

Explanation of the complete Mechanical Transport Sequence
- Tray Transport; Lifts
- Horizontal Transport; Shaker
- Gripper; Separator detection
- Module movement electrical / mechanical

Pneumatic Elements
- Main Valve; Pressure Monitoring
- Cylinders and Valves

Electrical / Electronic Components
- MDC / CAN Bus
- Power Supply / UPS
- Omron Safety System Door Contacts
- Separator detection Boards
- Motors and their functions
- Camera
- Interface Board
Technical Documentation / Electrical Drawings  Day 2

Flow Charts
Detectors; Light Barriers; Switches; Fuses
Electrical and Pneumatical Drawings

Mechanical Adjustments  Day 3 + 4

E-Test

Work project: Try all Functions available with E-Test

Parts exchange

Flat Belts horizontal
Tooth Belts Gripper
Tooth Belt Module Move
Separator detection

Summary

Questions and Answers

END
Training BPS M3

User Training

Operator Training
2 days

Administrator Training
2 days

Supervisor/Manager Training
3 days

Customer Specific Training
Customer Specified
duration customer dependent

Technical Training

Basic Training
2 weeks

Installation
2 days

BPS M3 Upgrade
4 days

Customer Specific Training
Please choose one or more of the following

Possible Training Topics
Contact the G&D Training Dept for more information

- Machine Service: 3 days
- Sensor System Analysis and Troubleshooting: 1 day
- Administration Review: 1 day
- Jam Recovery: 1 day
- Software Installation and Backup: 2 days
- Database: 2 days
- On Site Inspection and Maintenance: duration customer dependent
- Customer Specified: duration customer dependent
BPS M3 Operator Training

<table>
<thead>
<tr>
<th>Prerequisites:</th>
<th>Knowledge about BN Processing.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration:</td>
<td>16 hours (2 days)</td>
</tr>
<tr>
<td>Participants:</td>
<td>5 (max.)</td>
</tr>
<tr>
<td>Training aims:</td>
<td>After completion of this training course, the participant will be self-sufficient in banknote processing on the BPS M3. They will also be able to identify and solve simple faults.</td>
</tr>
</tbody>
</table>

Training Contents

System overview

- Input Module
- Operating Module
- Delivery Module
- Compressed and Suction Air Supply
- System start

Power on, log on, banknote processing and finish

Banknote processing

Recovery Procedure

Practical Exercises

End of training course
BPS M3 Administrator Training

<table>
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<tr>
<th>Prerequisites:</th>
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<tr>
<td>Duration:</td>
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</tr>
<tr>
<td>Participants:</td>
<td>5 (max.)</td>
</tr>
<tr>
<td>Training aims:</td>
<td>After completion of this training course, the participant will be self-sufficient in administration of the BPS M3. They will also be able to identify and solve simple user access faults.</td>
</tr>
</tbody>
</table>

Training contents

System overview

System start

Power on, log on, banknote processing and finish

Menus

Banknote processing

Detailed banknote processing including reject handling

Administration

Manage user Rights with the Control Center
Create Opmodes

End of training course
BPS M3 Supervisor / Manager Training

Prerequisites: Knowledge about BN Processing
Duration: 24 hours (3 days)
Participants: 5 (max.)
Training aims: After completion of this training course, the participant will be self-sufficient in banknote processing on the BPS M3. They will also be able to solve banknote recovery processes, interpret reports and logs, identify and solve simple operating failures.

Training contents

System overview

System overview
System start
Switch on system
Processing section

Menu's

Banknote Processing
Reporting System
Administration
Configuration

Additional options
Manage user Rights with the Control Center
Create Opmodes

Unexpected events and Cleaning Procedures

End of training
BPS M3 Basic Technical Training

Prerequisites: Refer to the “Skills Assessment BPS M7 Basic” document (also Valid for BPS M3).
Notebook with Win 7 or higher and administrator rights
- USB flash drive 64 GB

Duration: 2 weeks - approx. 80 Hrs.
Note: The training duration may be extended to 3 weeks if a translator is required.
The duration of the training can be shortened by 3 days. The prerequisite for this is a successful completion of the BPS M3 Update e-learning module. Please contact the training dept. for more information.

Participants: 5 (max)

Training aims: After completion of this training, the participants will be self-sufficient in the repair, maintenance and troubleshooting of the BPS M3 with respect to the mechanical, electrical and pneumatic systems.

System overview
Specifications
Construction

Processing basics
System start and first operation
Banknote Processing complete
Reporting system

Main Menu
Configuration and Administration
Software Tools

Mechanical system
General components
Input module and singler
Operation module
Delivery module and stacker
Bander unit
LDM and Coupling modules

Pneumatic system
BPS air system
Air supply module

Electrical system
Power Supply
MPC Hardware
Module controller
Monitoring and control

Sensor system
Sensor Computer System - SCS
Sensors
Measurement system

Software system
Components
Installation
Backup and recovery
Tools

System maintenance

Faults and Troubleshooting

End of training
BPS M3 Installation Training

Prerequisites: Refer to the “Skills Assessment BPS M7 Basic” document (also Valid for BPS M3).
- Notebook with Win 7 or higher and administrator rights
- USB flash drive 64 GB

Duration: 2 days - approx. 16 Hrs.
Participants: 5 (max)
Training aims: Participants are available to unpack the machine and install all modules in the right order. After the installation they are able to test the System.

Installation

Site and facility requirements
Modules description
Unpack the Modules
Mount the modules
Mount flat- and round belts
Connect compressed and suction air
Power connection
Test the System
Training BPS M5

BPS M3 Upgrade Technical Training

Prerequisites: Refer to the “Skills Assessment BPS M7 Basic” document (also Valid for BPS M3). Good experience on BPS 1000 or BP M … Machines
Notebook with Win 7 or higher and administrator rights - USB flash drive 64 GB
Note: This training will also be available as an eLearning. Please contact the training dept. for more information.

Duration: 4 days - approx. 32 Hrs.
Participants: 5 (max)
Training aims: Only the differences to the M machines or BPS 1000 Machines will be shown.

System Overview

Description and Technical Data

Module Specific Modifications

Input Module
Operator Module

Software

Structure
Installation and Imaging
Tools

Faults and Troubleshooting
BPS M3 Upgrade Technical Customer specific Training

Please apply for a customer specific training at the G & D Trainings center.
Training BPS Eco-Remote

User Training

Support Line
½ day

Customer
½ day

Customer Specific Training
Customer Specified
duration customer dependent

Training BPS Eco-Remote

Technical Training

Product Specialist
4 days

Field Engineer
2 days

Customer Specific Training
Customer Specified
duration customer dependent
BPS Eco-Remote Support Line

Prerequisites: Basic knowledge of computers and IT networks.
Duration: 4 hours
Participants max.: 4
Training aims: After completion of this training course, the participant will be self-sufficient in the use of the BPS Eco-Remote system regarding Remote Sessions to the BPS machines.

Training contents

- System overview of the BPS Eco-Remote system
- Account logon and access to the RAS Enterprise server
- Establishing and managing remote sessions
- Overview of the Policy Server
- Practice sessions

End of training
BPS Eco-Remote Customer

Prerequisites: Basic knowledge of computers.
Duration: 4 hours
Participants max.: 4
Training aims: After completion of this training course, the participant will be self-sufficient in the use of the Policy Server for the BPS Eco-Remote system.

Training contents

System overview of the BPS Eco-Remote system

Policy Server
- Access and logon
- Defining policies
- Creating users and user groups
- Managing remote sessions
- Analysis of the Audit log

End of training
BPS Eco-Remote Product Specialist

Prerequisites: Good knowledge of computers and IT networks.
Duration: 4 days (32 hours)
Participants max.: 4
Training aims: After completion of this training course, the participant will be self-sufficient in the installation, configuration, use, and support of the BPS Eco-Remote system.

Training Contents

- System overview of the BPS Eco-Remote system
- Review of network fundamentals
- Account logon and access to the RAS Enterprise server
- G&D RAS Server installation
- Windows RAS Server installation
- Policy Server Installation
- Policy Server Configuration and Management
- Software Management
- Establishing and managing remote sessions
- Training overview for all user groups
- Troubleshooting

End of training
BPS Eco-Remote Field Engineer

Prerequisites: Basic knowledge of computers and IT networks.
Duration: 2 days (16 hours)
Participants max.: 4
Training aims: After completion of this training course, the participant will be self-sufficient in the installation, configuration, and use of the Eco-Remote system.

Training Contents

- System overview of the BPS Eco-Remote system
- Review of network fundamentals
- Account logon and access to the RAS Enterprise server
- G&D RAS Server installation
- Windows RAS Server installation
- Policy Server Installation
- Establishing and managing remote sessions
- Basic Troubleshooting tips

End of training
BPS Eco-Protect

Prerequisites: Good knowledge of computers and IT networks.
Duration: 8 hours
Participants max.: 4
Training aims: After completion of this training course, the participant will be self-sufficient in the installation and configuration of the BPS Eco-Protect system.

Training contents

- System overview of the BPS Eco-Protect system
- Review of network fundamentals
- Overview of FTC / FTP / SFTP
- System Installation
- System Configuration
- Exporting and importing configurations
- Eco-Protect with Eco-Remote
- Troubleshooting

End of training
## BPS C4 Training

**with or without Shredder**

### Technical Training

- **Update Training**
  - 3-4 days

- **Basis Starter Training**
  - 4 days

- **Basis Training**
  - 8 days

### Operator / Supervisor Training

- **Customer Specific Training**
  - Duration & Topics customer dependent on request

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*Services Training Program Mar-2019*
Update BPS 200 to BPS C4 / BPS C4-STechnical Training

Prerequisites: Thorough knowledge of the BPS 200 machine
Duration: 3 days
Participants.: 4 (max)
Training aims: After completion of this training, the participants will be self-sufficient in the repair, maintenance and troubleshooting of the BPS C4 and / or BPS C4-S with respect to the mechanical, electrical and pneumatic systems.
Objectives: The Participants will learn the news and differences between BPS C4 / BPS C4-S and BPS 200. Installation of Software, background information of Windows CE and operation of the system will be trained. The troubleshooting with the help of the internal service tool will be trained as well.

Training Contents

Got to know BPS C4

Overview

Menus

BPS C4 Service Stick and Toolbox

OMOCO

Software Installation / Software Update

Windows CE specialties

Trouble Shooting

Practical Work

Shredder (optional)
End of training
BPS C4 / BPS C4-S Basic Starter Training

Prerequisites: Technical understanding in mechanics, Software and Computers.
Duration: 4 days
Participants max.: 4
Training goals: After completion of this training, participants will be self-sufficient in banknote processing on the BPS C4 /BPS C4-S. They will also be able to adjust and maintain the machine and do smaller repairs as well.
Subsequent trainings: Advanced- or Update Training

Training contents

Introduction

Presentation BPS C4
Site and facility requirements
Transport of the machine

System operation

Practical demonstration – processing a deposit
Operation modes configuration (OMOCO)
Protocols
Service menu
Shredder Optional

Repairs, removals and adjustments

Singler, round belts, flat belts, limpness sensor
Component location, item removal and replacement
Shredder Optional

Electric and electronic systems

Power supply
Module controller MDC
Power PC, CAN BUS, MAP 2
Shredder Optional
Sensor Unit

Assembly, disassembly
Cleaning

System software

Service software
Operating system Windows CE
Error codes, database
Hyper terminal

Service tools and troubleshooting

Using the service tool test procedures to check the machine

System maintenance

Maintenance procedures and adjustments

Options

Air supported singler
LDM (Large Delivery Module)
LPS (Limpness Sensor)
Shredder Optional

End of training
BPS C4 / BPS C4-S Basic Technical Training

Prerequisites: Technical understanding in mechanics, Software and Computers.
Duration: 8 days
Participants max.: 4
Training goals: After completion of this training, participants will be self-sufficient in banknote processing on the BPS C4 /BPS C4-S. They will also be able in repair and maintenance.
Subsequent trainings: Advanced- or Update Training

Training contents

Introduction
- Presentation BPS C4
- Site and facility requirements
- Transport of the machine
- User operator training
- Supervisor training

System operation
- Practical demonstration – processing a deposit
- Operation modes configuration (OMOCO)
- Protocols, printing and explanation
- Service concept, interface, menu
- Shredder Optional

Repairs, removals and adjustments
- Singler, round belts, flat belts, limpness sensor
- Stacker and failsafe
- Component location, item removal and replacement
- Shredder Optional

Electric and electronic systems
- Power supply
- MAT generator
Module controller MDC
Power PC, CAN BUS, MAP 2
Shredder Optional

Sensor Unit

Function
Assembly, disassembly
Cleaning
Practical training

System software

Customer laptop adjustments
Service software
Operating system Windows CE
Error codes, database
Hyper terminal

Service tools and troubleshooting

Problems with fit/unfit sorting
Using the service tool test procedures to check the machine
Presentation of realistic problems for troubleshooting guide

System maintenance

Maintenance procedures and adjustments

Options

Fast deposit processing FDP
Header card deposit processing HDP
Air supported singler
LDM (Large Delivery Module)
LPS (Limpness Sensor)
SFS (Soil and Stain Sensor)
Ticket Reading (CCD Camera)
Shredder Optional
End of training
BPS C4 / BPS C4-S Customer specific Training

Please apply for a customer specific training at the G & D Trainings center.
BPS C1 Starter Training

Prerequisites: Thorough understanding in software and computers
Duration: 1 day
Participants.: 4 (max)
Training goals: After completion of this training, the participants will be self-sufficient in the banknote processing on the BPSC1. The participants will also be able to install and update the BPS C1 in software regards.

Training Contents

Operating / Software

Sorting/Counting, Tickets, SerNo, cheques

Configuration/Settings

Software-Installation on Notebooks

PC-Suite with
  BPSC1-Update
  BPSC1-Upgrade

Update with SD-Card
Adaptation process
BPS C1 Technical Training

Prerequisites: Thorough understanding in mechanics, software and computers
Duration: 2 days.
Participants.: 4 (max)
Training goals: After completion of this training, the participants will be self-sufficient in the banknote processing on the BPSC1. The participants will also be able to repair, adjust and maintain the BPS C1 in mechanical and software regards.

Training Contents

Day 1: Operating / Software

Sorting/Counting, Tickets, SerNo, cheques
Configuration/Settings
Software-Installation on Notebooks
PC-Suite with
  BPSC1-Update
  BPSC1-Upgrade
End User Tool with
  Interfaces: API, XML, Reports
Update with SD-Card
Adaptation process

Day 2: Hardware / Test

Disassembling
  Parts replacement
  Adjustments
Maintenance Menu
  Component Test
  Calibration
Numeron Operator / Supervisor Training

Prerequisites: none
Duration: 1 day
Participants: 4, max. 6

Curriculum:

Presentation Numeron

Duration: 1 hour
Presentation of Numeron
Feature of Numeron
Processing a Deposit

Operator Training

Duration: 3 hours
Machine Safety
PMI pictogram introduction
Printing and explanation of protocols
Jam recovery
Explanation of the error codes
Machine adjustments by operator
User operation training
Daily checks, cleaning

Supervisor Training

Duration: 3 hours
Creating OP modes
Changing thresholds, machine settings etc.
More printouts
Adjustment
Typical Errors
Practical supervisor training
Fitness sorting settings (option)
**Numeron Technical Training**

**Prerequisites:** PC (with WinXP Pro / Win7 / Win10 and network connectivity, serial com port, administrator rights) Windows knowledge and Network knowledge.

**Duration:** 21 hours (3 days)

**Participants:** 4, max. 6

**Curriculum:**

**System operation**

Duration: 5 hours

**Practical demonstration**
- Processing a deposit

**Operator training**
- Machine safety
- Daily checks
- PMI pictogram introduction
- User operation training

**Supervisor training**
- Creating operation modes
- Changing thresholds, machine settings etc.

**System maintenance, repairs, removals and adjustments**

Duration: 8 hours

**Basic Numeron and CashRay theory**

**Component location; item removal and replacement**

**Disassemble & assemble machine parts**

**Machine testing**

**Routine maintenance procedures and adjustments**

**Service concept, contracts (optional)**
System software

Duration: 8 hours

Setup Service Laptops (Technician)
Software introduction
Numeron software installation
Update Numeron firmware
Prepare multi currency adaptations
CashRay 180 software and adaptation installation
Software update via ftp client
Using SenAdapUA – obtaining raw data from banknotes
Connecting Numeron to network, settings (optional)
Training NotaPack 10 System

Training NotaPack System

Technical Training

Operator Training
2 days

Field Engineer Training
5 days
NotaPack 10 Operator Training

Prerequisites: none
Duration: 12 hours (2 days)
Participants max.: 6
Training goals: After completion of this training, participants will be self-sufficient in operation of the NotaPack 10 together with an installed banknote processing system BPS 1000. They also will be able to identify and solve simple disturbances and perform basic cleaning jobs

Curriculum:

System overview

Documents
User manual

System overview
Safety rules of Notapack 10 System
Module overview
System demonstration

Basic functions of the modules
Module 1 feeding
Module 2 label printer
Module 3 sealing and shrinking
Module 4 lift
Module 5 and 6 bundle transport
Operation of NotaPack 10 system

NotaPack 10 settings and system start
- Controllers and safety elements
- Basic settings on Modul 3
- Printer and Modul 1 settings
- Working with automatic mode

Handling details and sealing procedure
- Package transport and monitoring
- Sealing procedure

Maintenance and Disturbances

Maintenance and replacements
- Cleaning according the user manual
- Replacement of consumables

System handling and disturbances
- Manual input and service mode activation
- Operating disturbances
- Error messages
- Cancelling bundles
Notapack 10 field engineer training

Prerequisites: Refer to the "Skills Assessment Notapack Basic" document.

Duration: 48 hours (8 days)

Participants max.: 6

Training goals: After completion of this training, the participants will be self-sufficient in repair and maintenance of the Notapack 10 with respect to electrical, mechanical and pneumatic system components. They also will be able to identify and solve mechanical and electrical problems.

Curriculum:

System overview

Documents
- User Manual, Service Manual and Site and Facility Requirements
- Electrical and pneumatic drawings
- CD with manuals of all external devices

Basic function
- Safety rules of Notapack 10 System
- Module overview
- System demonstration

Operation

Settings and system start
- Controllers and safety elements
- Basic settings on Modul 3
- Printer and Modul 1 settings
- Service key and automatic mode
- Display information and package monitoring
Components and supply

Electric system components
- Monitoring elements
- Drive systems

Power supply and control
- Power supply and modul connection
- Control principles / SPS
- Emergency loop and PNOZ
- Service key

Pneumatic system
- Pneumatic supply
- Valves and cylinders

Module details

Module 1 Feeding module
- Mechanical design
- Drive unit
- Start settings and bundle monitoring
- Connection to BPS System

Module 2 Printer
- Function and label application system
- Static print principle and settings
- Dynamic print principle and settings
- Connection to Modul 1 switchbox

Modul 4 Lift
- Mechanical design and function
- Safety cylinder
- Manual input mode

Module 3 Sealing and Shrinksystem
- Mechanical design and working principles
- Foil application and winding adjustments
- Sealing and shrinking details

Modul 5 and 6 Feeding modules
- System extension with Modul 5 and Modul 6
- Mechanical design and function of Modul 5
- Mechanical design and function of Modul 6
Operating panel and operation modes
- Main overview and Menu parameters
- Settings of operating parameters
- Automatic mode
- Manual operation / Service mode
- Settings and sealing results

Error messages and troubleshooting

Error messages
- Display of error messages
- List of error messages

Disturbances and troubleshooting
- Undefined disturbances at external modules
- Operating disturbances at Modul 3
- Sealing disturbances
- Cancelling BN bundles

Replacement and adjustments

Consumables
- Foil replacement
- Printer (Label strip and transfer ribbon)

Replacement of parts
- Cylinder and valve replacements
- Sensor and motor replacement
- Sealing bar and heater coil for shrink tunnel
- Hotline information of manufacture (Ruhlamat)

Adjustments
- Adjustments within the transport system
- Mechanical adjustments of Modul 3
- Settings of the temperature controllers
Cleaning and maintenance

Cleaning procedures
  Regular cleaning

Maintence
  Daily maintenance
  Weekly maintenance
  Monthly maintenance
  Three month maintenance
  Six month maintenance

End of training course