Course Outline (4 Days)

TRAINING MATERIALS:

BPS M3 Course Outline for distribution
BPS M3 Training Manual
BPS M3 Training Supplement (USB)
Laptop with Windows 7/10 with VMWare Player 12 installed
USB to Serial Convertor
USB stick (64GB preferable)

I. LESSON: Day 1

II. TOPIC: Introduction and Getting to know the BPS M3. Complete Overview of the System including available processing operations. Menu options for Operator, Supervisor, and Service roles. Various operational disturbance demonstrations. Software Installation.

III. TRAINING OBJECTIVES:

Upon completion of this day of the course, the successful student should be able to:

- Identify the supporting documentation and supplemental training available for the BPS M3 product.
- Recognize safety issues when operating and servicing the BPS M3.
- Describe the functional components that comprise the individual modules.
- Identify the different BPS M3 machine variants.
- Identify the optional and external equipment available for the BPS M3.
- Explain the various components used to operate and control the system.
- Identify the System Users.
- Describe the different modes of processing operations.
- Give details on the Banknote Processing operational procedures.
- Give an explanation on the different operational disturbances.
- Identify the configurations that will be used during training.
- Demonstrate how to configure, modify, and operate the system.

IV. INSTRUCTIONAL TASKS:

A. Review the outline for the BPS M3 Training Program

B. Identify the overall course goals, and the general course objectives.

C. Distribute the Training Manual and Technical Diagrams.

D. Distribute BPS M3 USB.

E. Identify the main sections in the Customer Documents, including:

1. Operating Manual

2. Site and Facility Requirements

F. Identify the main sections in the Service Documents, including:
   1. Maintenance Manual
   2. Repair Manual
   3. Adjustment Procedures
   4. Technical Diagrams
   5. Software Installation
   6. Control Center Documentation
   7. LVM-S.2/3/4
   8. Frequency Drive Converter

G. Identify the main sections in the Technical Documents, including:
   1.Quick Procedures

H. Identify the main sections in the Training Documents, including:
   1.Training Manual
   2.Training Handouts

I. Discuss the Terms and Abbreviations Training Handout.

J. Identify Safety features and concerns while operating the machine.

K. Identify the BPS M3 external equipment - Printer, Reconciliation PC, Eco-Protect, et cetera.

L. Identify the following:
   1. the Input Module
   2. the Operating Module
   3. the Delivery Module(s)
   4. the Fail-Safe pocket
   5. the Pneumatic Unit

M. Describe the method used to identify the different machine variants of the BPS M3

N. Identify how to power on/off the Pneumatic Unit.

O. Identify the components used to operate and control the system (at the Machine), including:
   1. Main Switch
   2. Emergency Stop buttons
   3. Safety Button (ZHT)

4. Drive Slow buttons
5. Hand wheel
6. Singler shaft
7. Touch Screen
    a. Header
    b. Machine view
    c. Selection bar
    d. Menu bar
    e. Content view
8. Bander keyboard
9. Lateral and Trailing edge guides
10. Fail Safe

P. Identify and describe the System Users:
1. Operator
2. Supervisor
3. Field Engineer
4. System Administrator
5. GD Expert

Q. Identify and describe the Accounting sections:
1.Shift
2.OpMode
3.Customer
4.Deposit

R. Demonstrate the Banknote Processing Procedure, including:
1. Logging on
2. Displaying / Hiding help
3. Changing the language
4. Selecting processing parameters
5. Preparing Banknotes
6. Processing Banknotes
7. Emptying Stacker Compartments
8. Emptying Fail Safe Compartment

9. Using the Handwheel
10. Changing Configurations
11. Change Password
12. Getting Reports
13. Logging on/off an additional user
14. Checking Pending jobs
15. Copying Process Data
16. Logging Off
17. Switching Off the System

S. Demonstrate how to open and close the machine.

T. Demonstrate various System Malfunctions, including:

1. Banknote Jam
2. Power Failure
3. Component Failure

U. Describe the manner in which rejects are handled.

V. Describe the difference between Header card processing and Deposit processing

W. Describe the difference between serial processing, parallel processing, and continuous feed processing.

X. Identify the three Currency modes that will be used extensively during training:

1. BLK
2. USD
3. GDN

Y. Run a shift and demonstrate the process of configuring the BPS M3.

Z. Demonstrate proper procedures for shutting down.

Software Installation:

A. Describe the steps involved to perform a complete Software Installation, including:

1. Installation of Image
2. Installation of Release
3. Deployment and Activation of Configuration Package
4. Other Installation Tasks

B. Perform an Installation of the Image:

1. Install Image

2. Setting Date and Time- QP01
3. Setting Regional Keyboard Layout
4. Installing the Printer- QP03
5. Further Installation without Eco-Protect

C. Perform an Installation of the Release:
1. Preparing Installation of Release
2. Starting Platform Installer
3. Uninstalling Packages
4. Installing Release Packages
5. Installing Languages
6. Configuring Hardcopy- QP04

D. Perform post-installation tasks.

E. Demonstrate the process to Disable and Enable the GDShell:
1. Configuring Automatic Startup and Shutdown- QP06

F. Demonstrate how to call File Explorer manually while booting.

G. Demonstrate how to reboot and shut down the machine manually via the Desktop.

I. LESSON: Day 2

II. TOPIC: Software Installation (continued), Control Center MPC, and BPS EcoConfigurator

III. TRAINING OBJECTIVES:

Upon completion of this day of the course, the successful student should be able to:

- Install the Image.
- Install the Release.
- Perform other Installation tasks.
- Perform functions of the Control Center Production Plug-in
- Perform functions of the Control Center Security Plug-in
- Create a Configuration Project with BPS EcoConfigurator
- Create a Deployment Package with BPS EcoConfigurator
- Deploy and Activate Configuration Packages.
- Perform the steps involved with Technical Bulletin 1.
- Perform the steps involved with Technical Information 1.
- Use the Download Control Center to determine a faulty Module Controller.

IV. INSTRUCTIONAL TASKS:

Conduct a review of the material covered to date with a Question and Answer session.

Software Installation:

B. Describe the steps involved to perform a complete Software Installation, including:

1. Installation of Image
2. Installation of Release
3. Deployment and Activation of Configuration Package
4. Other Installation Tasks

H. Perform an Installation of the Image:

1. Install Image
2. Setting Date and Time- QP01
3. Setting Regional Keyboard Layout
4. Installing the Printer- QP03
5. Further Installation without Eco-Protect

I. Perform an Installation of the Release:

1. Preparing Installation of Release
2. Starting Platform Installer
3. Uninstalling Packages
4. Installing Release Packages
5. Installing Languages

6. Configuring Hardcopy- QP04

J. Perform post-installation tasks.

K. Demonstrate the process to Disable and Enable the GDShell:

1. Configuring Automatic Startup and Shutdown- QP06

L. Demonstrate how to call File Explorer manually while booting.

M. Demonstrate how to reboot and shut down the machine manually via the Desktop.

Control Center MPC:

A. Demonstrate how to start Control Center MPC on the BPS M3.

B. Demonstrate how to select Plug-ins.

C. Demonstrate how to adapt the work area.

D. Demonstrate how to use the Production Plug-in:

1. Overview of the Production Plug-in
2. Deploying a Configuration Package
3. Deploying FTP Settings
4. Retrieving and printing Manual Reports
5. Displaying Live Viewer Graphs

E. Demonstrate how to use the Security Plug-in:

1. Overview of the Security Plug-in
2. System Start-up and Completion Procedure
3. Account Definitions
   a) Managing Users
   b) Assigning Users
4. Displaying and Creating Reports
5. Additional Functions of User Administration
6. Reports of Security Plug-in

A. Demonstrate how to use the Adjustment Plug-in:

1. Overview of the Adjustment Plug-in
2. Overview of the Machine Topology window
3. Viewing and analyzing Timing and Async Graphs
4. Making adjustments to timing values/VE0MatDiff
5. Generating a Change Log

Control Center Service:

A. Demonstrate how to start Control Center Service on the BPS M3.

B. Demonstrate how to use the System Maintenance Plug-in:

1. Manual Production End
    a) TI-01 Enable Manual Production End for Supervisors
    b) TB-01 Perform Manual Production End
2. Olymp System Info Console
    a) Download Control Center
    b) MIF

BPS EcoConfigurator:

A. Demonstrate how to start the BPS EcoConfigurator on the BPS M3.

B. Demonstrate the process for creating a Configuration Project:

1. Configuring Hardware on the M-Platform
2. Configuring Currencies
3. Configuring Currency Settings
4. Configuring Operation Modes
5. Configuring Threshold Sets
6. Configuring Reject Reasons
7. Configuring Reports
8. Configuring Machine Settings

C. Demonstrate the process for creating a Deployment Package:

D. Demonstrate the process for deploying and activating a Configuration Package:

1. Deploying Configuration Package- QP02
2. Activating Configuration Package (Change Configuration Package)

I. LESSON TITLE: Day 3

II. TOPIC: Hardware Differences

III. TRAINING OBJECTIVES:

Upon completion of this day of the course, the successful student should be able to:

- Identify the various components comprising the Machine PC.
- Identify the individual Module Controllers and their functions.
- Identify the extension boards and their functions.
- Remove and replace the round belts.
- Perform belt tension adjustments utilizing the frequency tuner.
- Remove and replace transport rollers.
- Explain the principles of the Sensor System.
- Remove and replace the Sensor Suite.
- Remove and replace the Sensor Computer System(SCS).
- Perform service tasks on the Sensor System.
- Describe how files are transferred between the SCS and MPC.

IV. INSTRUCTIONAL TASKS:

Conduct a review of the material covered to date with a Question and Answer session.

Machine PC:

A. Identify the components of the Machine PC(MPC), including:
   1. Interfaces
   2. List of Hardware Components
   3. Layout of the MPC
   4. Hardware Connections
   5. MPC Housing
   6. Power Supply
   7. Housing Fan
   8. Air Filter
   9. SSD Drives
   10. Memory
   11. Softing CAN Pro USB controller
   12. MPC Software
      a) Windows 10 IOT (Internet of Things)
      b) Oracle 11iR2 Database

B. Identify and describe the components of the Motherboard / CPU Board, including:
    1. Intel Core i5-3610ME/2.70 GHz/ Dual core (4 threads)
    2. CR2032 battery
C. Identify and describe the interfaces of the CPU, including:
    1. Serial Port Com 1
    2. Serial Port Com 2
    3. eSATA
    4. USB
    5. Ethernet Connector 1 (ETH 1)
    6. Ethernet Connector 2 (ETH 2)
    7. Ethernet Connector 3 (ETH 3)
    8. VGA Interface
    9. Display Port Interface

Real Time Control – Distributed Controller System:

A. Identify the current generation of Module Controllers used in the BPS M3:
    1. MDC3NG-ARM
B. Identify the Module controllers, their locations, and describe their functions:
    1. the Singler Module Controller (SMC)
    2. the Sensor Transport Controller (STC)
    3. the Gate Photodetector Controller (GPC)
    4. the Bander Printer Controller (BPC)Controller
C. Describe the methods used to name the GPC and BPC.
D. Describe the Module Controller interfaces, including:
    1. Communication/CAN bus
    2. Wired Output Matrix (WOM)
    3. Serial Interface RS232
E. Identify and describe the Extension Boards used in particular Module Controllers, including:
    1. DSP3
    2. MCM3
    3. BPI3
F. Describe the Software Architecture of the Real Time Control elements:

1. Boot Software / Firmware
2. Module Addressing

G. Identify and describe the components of the of the MDC3NG-ARM Board, including:

1. Status Display
2. MDC fuses
3. Switch Groups
4. Reset and Service Buttons

Large Continuous Feeder (LCF):

A. Identify and describe the LCF electrical components, including:

a) Mirror reflective photodetectors
b) Inductive proximity switches
c) Fiber optic photodetectors (VOIDS)
d) Point to point photodetector (PD_DENS)
e) Stepper motors

B. Identify and describe the LCF mechanical components, including:

a) Feeder Plate (FEPL)
b) Feeder Rake (FERA)
c) Sliding Door (SSG)

C. Perform LCF Adjustment Procedures, including:

a) Mirror reflective photodetectors
b) Inductive proximity switches
c) Fiber optic photodetectors (VOIDS)
d) Point to point photodetector (PD_DENS)

Round Belt System:

A. Perform Round belt removal and replacement procedures.

B. Perform Roller removal and replacement procedures, including:

1. Idler roller
2. Drive roller
3. Sensor roller

Flat Belt System:

4. Perform Flat belt removal and replacement procedures.
5. Perform Flat belt Adjustment Procedures.

6. Identify and describe the purpose of the Pneumatic Tensioner.

Sensor System:

A. Identify and describe the NotaScan in One 2 (NSCIO2) Sensor suite, including:
   1. Components of the Sensor suite
   2. Removal and Replacement
   3. Servicing DIS felts
   4. Roller removal and replacement

B. Discuss the Sensor PC application.

C. Identify and describe the interfaces between components.

D. Identify and describe the SCS Interfaces.

E. Identify and describe the SCS Backplane.

F. Identify and describe the SEP5 board.
   a. Perform removal and replacement procedures.

G. Identify and describe the External Interfaces of the SCS.

H. Describe the File Interface protocol associated with the Sensors.

I. Discuss typical maintenance tasks.

J. Discuss how to perform Error Diagnosis.

K. Identify and describe the Centering Elements.

L. Demonstrate how to properly perform Sensor Cleaning tasks.

Operating Module Components:

I. Perform Operator Panel removal and replacement procedures, including:
   A. Touchscreen
   B. Transport On/Off buttons
   C. Singler start/Rerun/Pause buttons

II. Identify and describe the Reject stacker components.
   A. Perform Stacker wheel removal and replacement procedures.

III. Perform Emergency stop button removal and replacement procedures.

IV. Identify and describe the hardware components connected to the USB Hub.

V. Identify and describe the purpose of the Frequency Converter Unit (FCU).

VI. Discuss functions related to the FCU, including:
   A. Installation/wiring procedures
   B. Viewing and editing parameters

C. Parameter Organization
D. Steps occurring upon transport start/run
E. Steps occurring upon transport jam clearing
F. Steps occurring when the LVM.S-2/3/4 is active

Delivery Module:

A. Identify and describe the differences between the DM410 and DM450 Delivery Modules, including:
   1. Band dispenser redesign
   2. Band welder adjustment thumbscrew
   3. No OPA collector cylinder/brake
   4. Lower door redesign
   5. New Technical Diagrams format for Delivery components

I. LESSON:Day 4

II. TOPIC: Course completion, final review, critique, and graduation.

III. TRAINING OBJECTIVES:

Upon completion of this day of the course, the successful student should be able to:

- Demonstrate proficiency in preparing the BPS M3 for production.
- Demonstrate proficiency in creating configuration packages with EcoConfigurator.
- Demonstrate proficiency in operating the BPS M3.
- Demonstrate proficiency in troubleshooting the BPS M3.
- Demonstrate proficiency in preparing manual reports in Control Center.
- Demonstrate working knowledge in relation to all aspects of the BPS M3.

IV. INSTRUCTIONAL TASKS:

A. Conduct a Final Review.

B. Distribute the Final Test (Online).

C. Conduct Practical Tests.

D. Direct the students to perform the Training Course Survey.

E. Conduct Graduation activities.

F. Bring Training Manuals to Logistics for shipping to Home Sites.