Computer Integrated Manufacturing with OpenMES 2

COURSE OUTLINE

Course Name	**Computer Integrated Manufacturing with OpenMES 2**
Catalogue Number	88/77-3018-0000
Category	CIM
Duration	15 Hours
Recommended Prerequisites	Advanced Robotic Programming, CNC Technology courses, Computer Integrated Manufacturing with OpenMES 1

Activity 1: Mass Production and CIM

Mass Production

The Demo Cell Components

Task: Exploring the Demo Cell

Part Production and Assembly

Task: Simulating Production of Multiple Products

Activity 2: Robotic Systems

Robotic Systems in CIM

Robotic System Components

How Robots Move

Work Envelope

Types of Robot Joints

Common Coordinate Systems

Types of Robots

Adding and Connecting Robots in OpenMES

Task: Adding and Connecting the ASRS

Task: Adding and Connecting the Robot at the CNC Station

Task: Adding and Connecting the Robot at the QC Station

Activity 3: Location Planning

Overview of Cell Structure

Detailed View of the CIM Workstations

Task: Examining the Cell

Considerations in Location Planning

Task: Observing the Production Cycle

Activity 4: QC Devices

Automated Quality Control

QC and System Behavior

QC Processes in the OpenMES Cell

Phantom Parts

Task: Identifying the Correlation between Phantom and Product Parts

Identification Capabilities

What is Barcode?

Barcode Applications

Adding Identification Capabilities

Task: Adding a Barcode Scanner

Task: Defining the Barcode Reading Process

Task: Adding Barcode Reading into the Part Definition

Task: Incorporating the Barcode into an Existing Product Definition

Task: Updating the Storage Settings

Task: Placing an Order for the Part with the Barcode

Task: Observing the Production Sequence

Activity 5: Feeders

Feeders in the CIM Cell

Types of Feeders

Task: Adding Feeders to Workstation 2

Task: Assigning Feeders to Supplied Parts

Task: Changing the Production Sequence

Task: Updating the Storage Settings

Task: Submitting the Manufacturing Order

Task: Observing the New Production Sequence

Activity 6: Adding an Assembly Station

Assembly and Mass Production

Task: Adding an Assembly Workstation

Task: Defining the Assembly Process

Task: Creating a New Part

Activity 7: Assembled Part Production

Sequence of Production

Palletizing Racks in Assembly

Task: Reviewing the Part Definition

Task: Placing an Order for the Assembled Part

Task: Updating the Storage Settings

Task: Observing the Production Sequence

Impact of Quantity on Production

Task: Setting Initial Quantity in the Manufacturing Order

Task: Updating the Storage Settings

Task: Observing the New Production Cycle

Activity 8: Assembled Product Characteristics

Producing Complex Assembled Products

Planning Considerations

Task: Adding a Rack to the Assembly Station

Task: Defining the Assembly Process

Task: Redefining an Assembled Part

Task: Preparing to Run the Production Cycle

Task: Observing the New Production Cycle

Activity 9: Expanding Assembly Capabilities

Assembly Processes

Planning Considerations

Task: Adding an Automatic Screwdriver

Task: Defining the New Assembly Process

Task: Redefining the Part

Task: Preparing to Run the Production Cycle

Task: Observing the New Production Cycle

Activity 10: Subassemblies and Multi-level Assembly

- Multi-level Assembly Operations
- Preparing the Cell for Complex Assembly Operations
- Task: Adding Storage Devices to the Assembly Station
- Process and Part Definition Requirements
- Task: Modifying the Machine Definition
- Task: Defining the Assembled Subpart

Activity 11: Purchase Orders and MRP

- MRP in OpenMES
- Purchase Order Details
- Task: Adding a Supplier
- Task: Connecting Supplied Parts to Suppliers
- Material Requirement Planning
- Task: Placing a New Order and Observing its Impact
- Task: Verifying Stock Availability
- Task: Submitting the Manufacturing Order
- Task: Observing the Production Sequence

Activity 12: Multi-level Assembly Production

- Complex Multi-level Assembly
- Task: Adding a QC Vision Device to the Assembly Station
- Task: Modifying the Machine Definition
- Task: Updating the Part Definition
- Task: Updating the MRP
- Task: Updating the Storage Settings
- Task: Initiating the Production Cycle for ASSEMBLY PROD

Activity 13: CIM Database: Part I

- Databases and Production Management
- Databases in OpenMES
- OpenMES Database Types
- Viewing the Production Plan
- Task: Preparing to Run the Production Cycle
- Task: Tracking Production in the Program View
- Task: Tracking Multiple Production in the Program View

Activity 14: CIM Database: Part II

- OpenMES Database Files
- Leafpart Log File
- Reading Data in the View Leaf Tab
- Task: Viewing Production Data in the Leaf View
- Comparing Viewing Options
- Task: Viewing Production of MILL WOOD PROD in the Leaf View

Activity 15: Conclusion

- Modifying the OpenMES Setup
- Supplying Parts in OpenMES
- Task: Adding a Gravity Feeder
- Task: Assigning the Feeder to MID SUP
- Task: Updating the Storage Settings
- Task: Initiating the Production Cycle