CIM Robo

Specs/Labs

ATTC NEQIP

(Annexure 9.4.3)

TECHNICAL SPECIFICATION FOR FMS/CIM LAB

1. FMS ACCESSORIES ALONG WITH THE CNC LATHE MACHINE

1. Pneumatic Chuck 100 mm – 1 no
2. Automatic Door – 1 no
3. Work Bench – 1no

2. MATERIAL HANDLING TECHNOLOGY

LOADING / UNLOADING ARM FOR THE LATHE MACHINE

Type : PNEUMATIC ACTUATED MANIPULATOR WITH GRIPPER

Number of axes	2
Axis 1 (Shoulder Movement)	Rotary (0 – 130 deg), combined with 90 deg rotation of the wrist
Axis 2 (Component insertion)	Chuck/Pallet (25 mm)
Handling capacity	100 gm / 0.22 lbs.
Gripper (Rack and pinion angular gripper)	ø16 mm / 0.63 in
Controls	Additional I/Os of Machine Controller
Drive	Pneumatic Rotary actuator (Adjustable angle)

3. WAREHOUSING TECHNOLOGY & MATERIAL HANDLING TECHNOLOGY

AUTOMATIC STORAGE AND RETRIEVAL SYSTEM WITH RFID TRACKER

Stand-alone floor mounted system to train the concepts of Material Storage and Handling

Mounting	Stand-alone floor mounted system
Frame	Frame is built aesthetically using natural anodized aluminum profiles
Guides	LM Guides
No. of storage cells	18 (6 rows x 2 column)
X Axis Travel	Auto: 700 mm (27.6 in) Manual: 1000 mm (39.4 in)approx
Y Axis Travel	Auto: 820 mm (32.3 in) Manual: 900 mm (35.4 in) approx
Z Axis Travel	210 mm (8.3 in) approx
Load carrying capacity	Around 2 kg (4.4 lbs)
Transfer Station	Transfer station will be provided to accept the pallet from ASRS platform and AGV or Linear Slide. The transfer height is adjustable according to the height of the conveyor or AGV or linear Slide.
Platform movement along X, Y and Z	The platform is traversed in X and Y axes by belt and AC servo motors and Z axis through DC motor controlled by PLC
Facility for interfacing	Touchscreen HMI for teaching and interfacing with Cell controller/Peripheral

4. AUTOMATED GUIDED VEHICLE

Stand-alone floor mounted system to train in the concepts of Material Storage and Handling

- Guidance and Routing for Material flow Obstacle sensing and accident
- Prevention Load transfer through power push/pull
- Load Carrying Capacity: 20 kgs / 44 lbs. (MAX)
- Max. Travel Speed: 20m/min or 66ft/min
- Min turning radius: 1000mm / 40in

Controller:

- Control : PLC controlled with touch screen HMI
- Sensor & Guidance : Track cable and RF signal pick-up
- Drive : DC Drive

At each intermediate station, one short transfer conveyor will be provided to transfer the pallet. Sensors are fitted on the stations as per the CIM layout.

5. INTERMEDIATE JOB TRANSFER STATION (TRANSFER CONVEYOR)

- This type of conveyor system acts as an intermediate conveyor /material transfer system from one module to another. The modules can transfer between CNC machines to AGV, AGV to ASRS, AGV to Assembly Station, etc. These platforms of conveyors are fitted with flat belt transmission upon which the pallet containing the material is transferred.
- Material transfer system integration with ASRS, Loading/ Unloading System, Manufacturing, Assembly station, etc
- Length of Conveyor : Approx. 500 mm (19.7 in)
- Width of Platform : Approx. 300 mm (11.8 in)
- Type of Transmission : Flat Belt
- Drive : DC Geared motor, Feedback control. Fitted with sensors

6. FMS/CIM SYSTEM WITH MASTER AND CONFIGURATION SOFTWARE FOR FMS/CIM – CIMSIM

Introduction

This software is designed to configure and control the CIM system. The field devices are controlled by Micro-controllers and PLCs. The software simulates the executing devices to give a better understanding of the operations in the virtual screen, during online execution. Thus it can work as a standalone system (off-line) and device controller (on-line). Integration of RFID technology with the existing CIM Setup allows real-time data capture from the CIM setup and use it for fine-tuning operations.

Software Modules

Device drivers, Modes, IO card

Shop Floor Layout, Process Planner, Sequence Planner, Dispatcher, Log Viewer.

Sanjeev N. for your input and suggestions.

Software Features

Master

- Online –Manual / Auto. Offline – Manual
- Secured Device Enabling & Disabling
- Animation for all Devices
- Easy identification of status of each device.
- Screen Lock function is implemented to lock the software
- Navigation with tabs on GUI screen
- Secured command execution with internal & external interlocks on both Online/Offline mode
- Animated Online IO card testing module is available to check IO's in the cell controller Animated Help file with step by step execution of Software operating procedure with individual command explanation
- Particularly favored for Research & Development in FMS
- Designing the Shop floor layout by Pick & Place the machine in work area with four directional views
- The Process plan of the shop floor layout can be documented in the process planner. i.e , file name, material specification, sequence of operation
- Any type of sequence generation is possible either pre-defined or user-defined.
- Automatic ASRS rack status detection feature available
- Current command on execution is highlighted in the auto generated command list
- Each machine status and individual process time is displayed at the run-time
- Flexibility to START/PAUSE the sequence
- Data log /Cycle time viewer - Individual machine/ overall system cycle, with data export feature
- Estimated time allocation for each command of the machine can be set by the user in the setting panel
- Running & Over Running Indication

7. REQUIRED EQUIPMENT AT SITE FOR FMS/CIM

FOR SINGLE FMS SETUP

1. Suitable Stabilizer 10 KVA, Single Phase – 1 no
2. Personal Computer - 1 No's with the following Configuration
   - Windows 7 Operating System or higher
   - 80 GB Hard disk (minimum requirement), 1GB Graphic card and 4GB RAM.
   - Intel Core 2 Duo E 4300 with 2 x 1.8 GHz
3. Suitable Compressor - With minimum 200 Liter tank Capacity or above, 6 to 8 Bar (100 – 150) – 1 no