

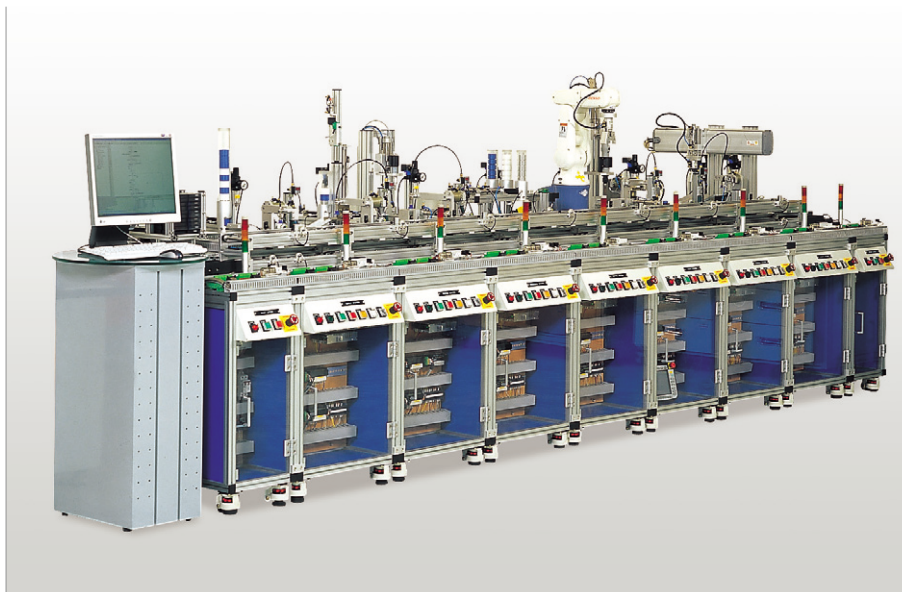
• Factory Automation

COMPUTER- INTEGRATED MANUFACTURING TRAINER

ED-CIM

The Computer-Integrated Manufacturing System (ED-CIM) is an educational purpose, training system that demonstrates the logistics system based system approach that is being used currently by industry. Th ED-CIM comes with powerful user friendly software that integrates the Programmable Logic Controller (PLC) related control with the PC to offer real-time system monitoring. This feature allows users to set up experiments that use advanced control methods for controlling mechanical elements in the system.

The ED-CIM course materials and experiments are designed to encourage student interested in current manufacturing systems. Students will perform various activities that will guide students on how to set up, control, perform trouble shooting and adapt various command languages to control systems within the CIM. Students will gain a greater understanding of how these systems are used in real world industrial applications.



> FEATURES

- Computer-Integrated Manufacturing Training System under the application of advanced control technology for real field experiences
- Capable of “per unit” configuration into the two or more processes, or entire processes for customized experiments by combining each process
- Gives students an insight into the production mechanism through firsthand practices in disassembly and assembly of hardware components
- Excellent “per process” configuration (Supply → Inspection → Fabrication → Classification → Robot → Assembly → Storage)
- Palette transport by conveyors which are the distributional basis of production system
- Transport and supply by an industrial robot in the robot processing

> TOPIC COVERAGE

- **Inlet Lifter** : Up/Down Transfer Lifter, Pallet Supply
- **Supply Process** : Material Provider, Material Transfer Rotating Cylinder
- **Inspection Process** : Inspection Device, 2nd Material Provider, Material Transfer Rotating Cylinder
- **Fabrication Process** : Small Drill Machine, Clamping Device, Material Transfer Rotating Cylinder
- **Classification Process** : Material Provider for dummy objects in three types (white, blue and metallic)
- **Robot Process** : 5-Axis/6-Axis Compound Joint Robot, Material Detection Device
- **Assembly Process** : Screw Driver System, Screw Feeder System,
- **Storage Process** : X-Y Storage Crane, Classification Slide
- **Outlet Lifter** : Up/Down Transfer Lifter

> EXPERIMENTS

- CIM SYSTEM
- Sensor Control Technology
- Pneumatic Control Technology
- Conveyor Control
- Analog Sensor Control
- Per Unit Process Control
- PLC Programming
- Trouble Shooting and Main Transformer
- Robot Control
- Standalone or Integrated System Operation
- HMI Software
- PLC Network by Ethernet
- Disassembly and Assembly
- PC Integrated Control Methods

> SPECIFICATIONS

HMI SYSTEM

- HMI Controller
 - » Panel size 15"
 - » Resolution 800 x 600
 - » Color TFT LCD
 - » Touch operation
 - » RS232/422/485, Ethernet, USB
 - » 40GB HDD Type
 - » OS : Windows 2000
- HMI Software
 - » Unlimited Tags
 - » Over 120 I/O devices as basic
 - » Visual Basic Script
 - » OS : Windows 95/98
Windows 2000/ME/XP

PERUNIT EXPERIMENTS



1. Inlet Lifter

- Main Components
 - » Pallet up/down supplier
 - » Forward/reverse conveyor
 - » Material supply through the upper end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
- Experiment Topics
 - » Structure of the material and pallet supplier
 - » Principle of the supply and distribution process
 - » Experiments on basic electro pneumatic operation
 - » Forward/reverse operation of the DC motor



2. Supply Process

- Main Components
 - » Material Provider
 - » Rotating cylinder for material supply
 - » Transfer Unit designed for the vacuum absorption
 - » Upper/lower end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
- Experiment Topics
 - » Mechanical understanding of the material supply
 - » Uses and characteristics of various detection sensors
 - » Application of pneumatic devices in rotating movement
 - » Transfer experiments using the Vacuum Generator and Absorber
 - » Basic control in liaison with the conveyor



3. Inspection Process

- **Main Components**
 - » Inspection Lifter
 - » Rotating Cylinder for the goods to be inspected
 - » Transfer unit designed for vacuum absorption
 - » Linear potentiometer for thickness
 - » Upper/lower end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
 - » Slave Analog/Digital
- **Experiment Topics**
 - » Mechanical understanding of the material inspection
 - » Uses and characteristics of various detection sensors
 - » Application of pneumatic devices in rotating movement
 - » Transfer experiments using the Vacuum Generator and Absorber
 - » Treatment and application of the analog data



4. Fabrication Process

- **Main Components**
 - » Rotation cylinder to transfer the fabricated goods
 - » Transfer unit designed for vacuum absorption
 - » Clamping device
 - » Drill device
 - » Upper/lower end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
- **Experiment Topics**
 - » Mechanical understanding of the material fabrication
 - » Uses and characteristics of various detection sensors
 - » Application of pneumatic devices in rotating movement
 - » Transfer experiments using the Vacuum Generator and Absorber
 - » Basic control in liaison with the conveyor



5. Classification Process

- **Main Components**
 - » Material classification provider for the dummy objects in three types: white, blue and metallic
 - » Classification process by original material's quality
 - » Upper/lower end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
- **Experiment Topics**
 - » Mechanical understanding of the material classification
 - » Uses and characteristics of various detection sensors
 - » Material classification by the detection of conditions



6. Robot Process

- **Main Components**
 - » 5(6)-Axis compound joint robot
 - » Upper/lower end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
- **Experiment Topics**
 - » Configuration of the robot's teaching point
 - » Programing for operation
 - » Real-time motion monitoring
 - » Automatic operation in liaison with the controller
 - » Material supply and transfer experiments



7. Assembly Process

- **Main Components**
 - » Screw driver
 - » Screw transfer
 - » Screw feeder
 - » Clamping device
 - » Upper/lower end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
- **Experiment Topics**
 - » Mechanical understanding of the material assembly
 - » Operation of Vibration Feeder
 - » Uses and characteristics of various detection sensors
 - » Application of the pneumatic devices in rotating movement
 - » Transfer experiments using the Vacuum Generator and Absorber



8. Storage Process

- **Main Components**
 - » 1-axis cartesian robot for storage
 - » Classification slide for finished goods
 - » Upper/lower end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
- **Experiment Topics**
 - » Configuration of the robot's teaching point
 - » Programing for the robot's motion
 - » Automatic operation in liaison with the controller
 - » Storing experiments in liaison with the conveyor



9. Outlet Lifter

- **Main Components**
 - » Forward/reverse conveyor
 - » Material resupply through the lower end conveyor
 - » Slave Input 16P
 - » Slave Output 16P
- **Experiment Topics**
 - » Structure of the material and pallet supplier
 - » Principle of the Pallet's return process
 - » Experiments on basic electro pneumatic operation
 - » Forward/reverse operation of the DC motor