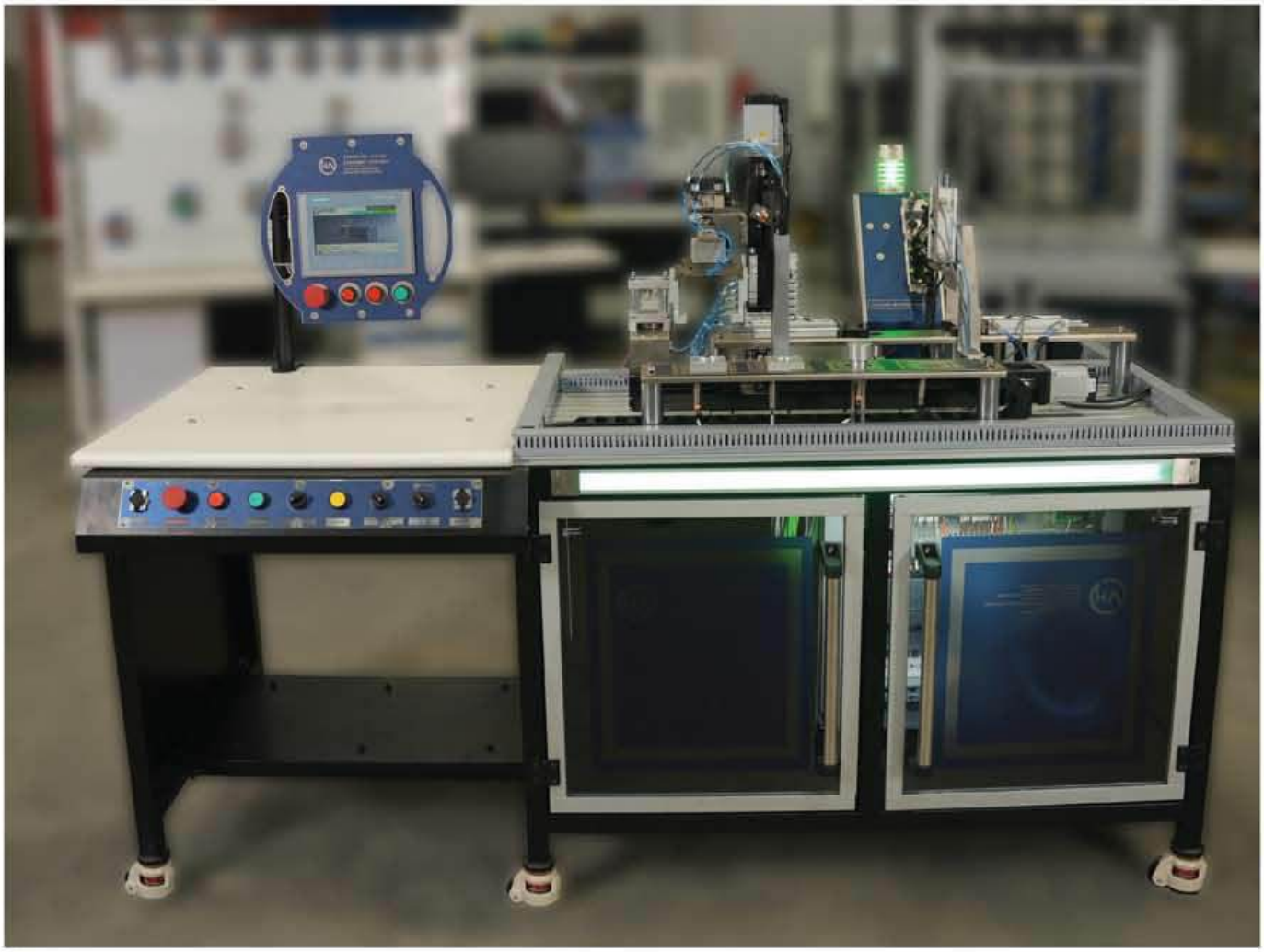
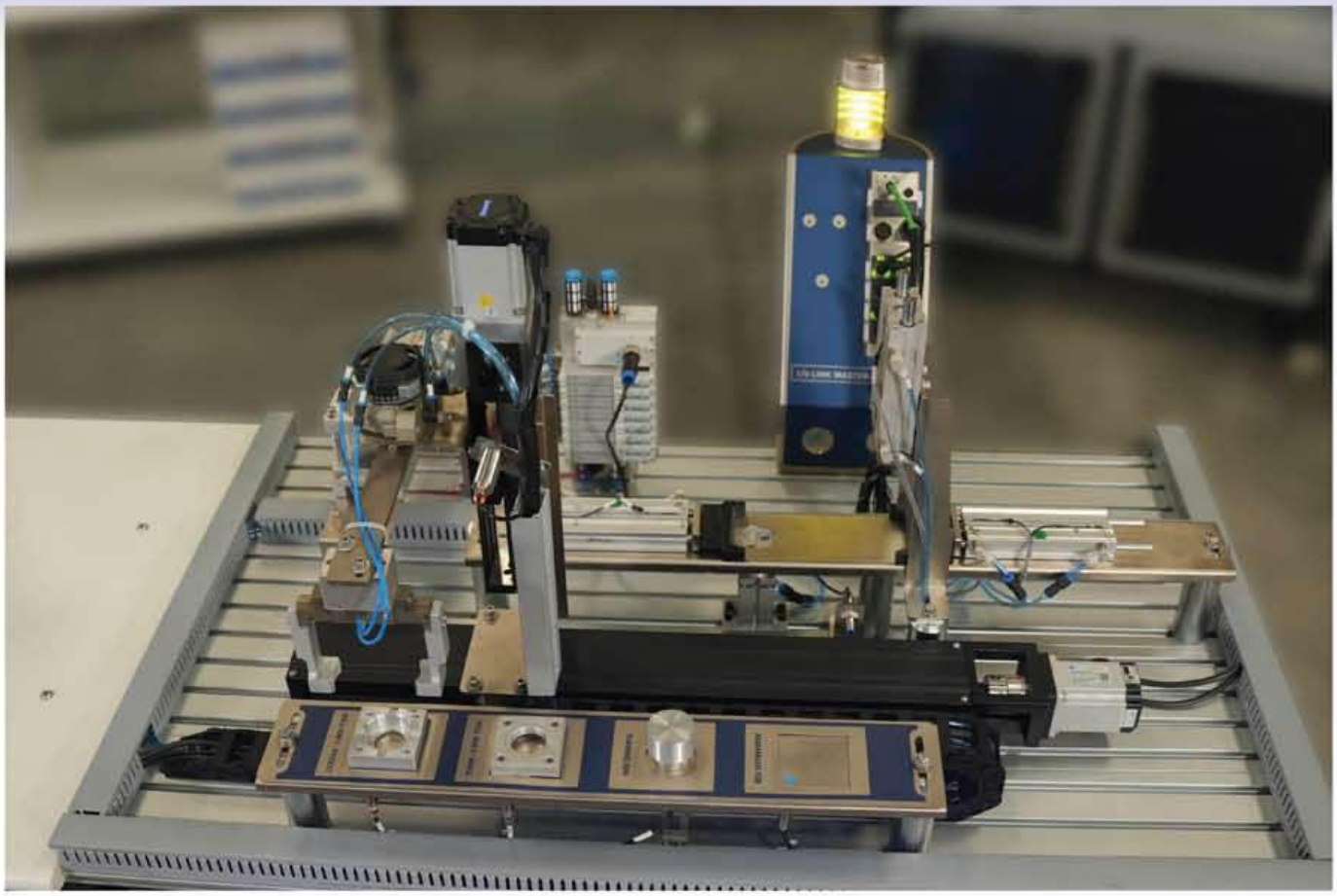
ASSEMBLY STATION WITH PLC AND HMI



Hytech Didactic Assembly Station is a mechatronics based training system designed to carry out automated assembly of 4 different parts with pneumatically and electrically actuated process. Automated bearing dispensing station is also provided in the system. Entire station is programmed and operated with SIEMENS PLC and HMI.

Users can have hands on experience on the remote commissioning as well through Siemens Mechatronics Concept Designer Software. Assembly station is an individual station which can be integrated with Hytech Computer Integrated Manufacturing System. When integrated with Computer Integrated Manufacturing system, raw jobs are loaded in the assembly station by gantry mounted robot whereas in an individual system, these raw jobs are loaded manually.

User can change the process as well as the PLC ladder and HMI screens depending on training requirements. This station is designed to provide students with real time industrial automation process and integration of various automation components such as PLC, HMI, Servo motors, Auto feeders, pneumatic press process etc



Assembly Station Experiments:

Assembly Station can be used individually as well as in integration with the entire CIM Setup. Assembly Station is equipped with PLC as well as HMI and relevant software necessary for the PLC and HMI programming.

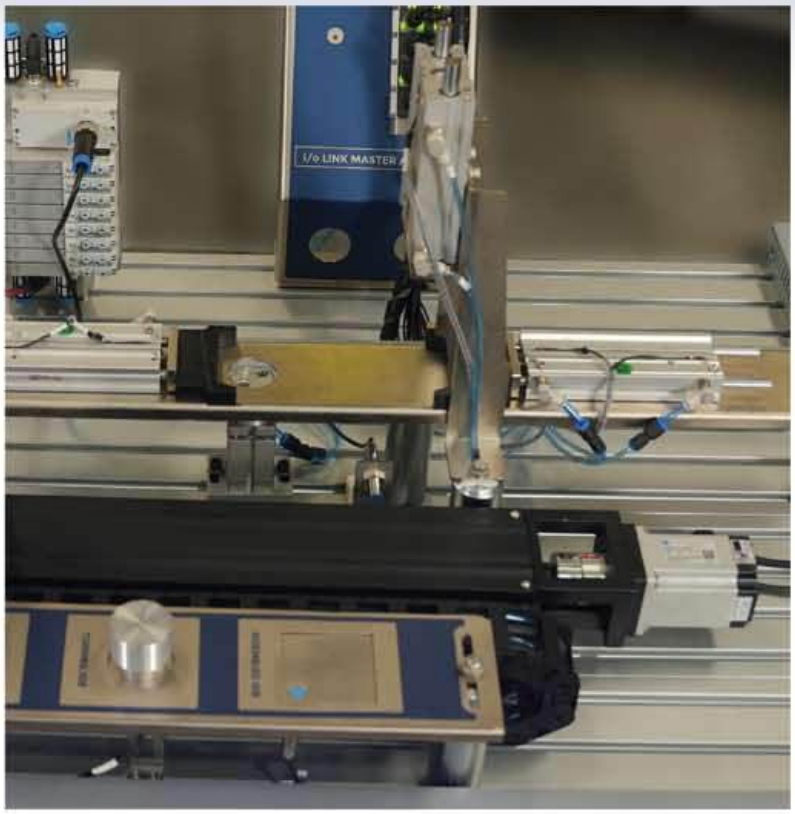
Even in integration setup with CIM, Assembly cell will initiate the process once it receives the signal from Central Control Unit. It will complete entire task of assembly and pass on the signal of process completion to CCU (Master PLC) for further process.

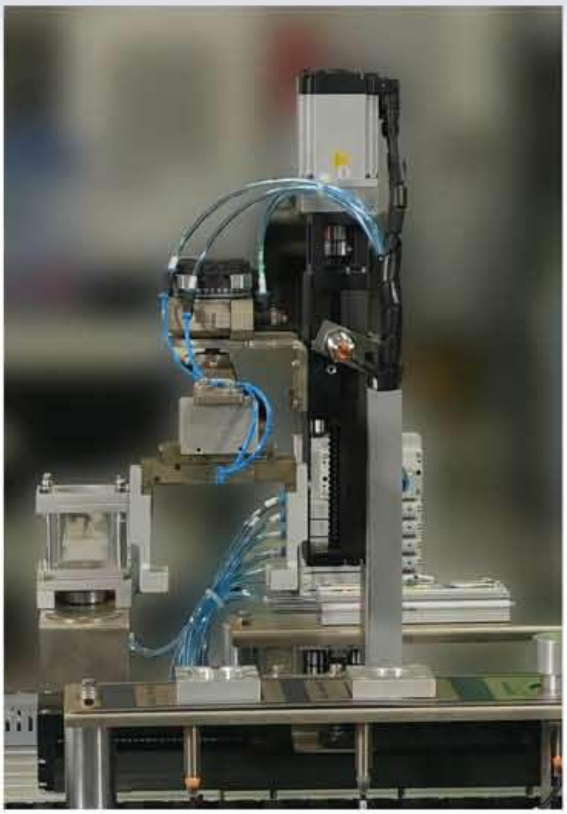
For experimentation, user is expected to carry out all process cycles or experiments on assembly station in individual mode. In ideal scenario, assembly station is programmed individually and then integrated with the CIM setup.

There are 3 jobs which are to be assembled together on assembly station along with bearing assembly. Bearings are fed into the assembly station automatically. Three manufactured jobs which are to be assembled in assembly station are as follows:

1. Mill Job 1 – Pocket Job
2. Mill Job 2 – Male Job
3. Turning job – Shaft

All three jobs are to be placed on the assembly pallet for experimentation to start.





Technical Details of Assembly Station:

Servo Slides	
Servo Slide 1	Servo Slide with ball screw and LM Block
	Minimum stroke of 500mm
	Servo Motor (AC Digital Servo) with minimum capacity of 400 Watt
	Servo Motor amplifier with PT Logic
	Drag Chain for Servo Slide 1
Servo Slide 2	Servo Slide with ball screw and LM Block
	Minimum stroke of 200mm
	Servo Motor (AC Digital Servo) with minimum capacity of 200 Watt
	Servo Motor amplifier with PT Logic

Press Module	
Slide Cylinder 1	Servo Slide with ball screw and LM Block
Slide Cylinder 2	Pneumatic Guided cylinder with minimum stroke of 150mm and with FCV
Press Cylinder	Pneumatic Guided Cylinder with minimum bore of 25mm and stroke of of 100mm with FCV
Vertical Lift Cylinder	Square cylinder with guides and with minimum stroke of 25mm

Assembly Pallet	
Assembly Pallet	Cell 1 to store Mill Job 1
	Cell 2 to store Mill Job 2
	Cell 3 to store Turning Job
	Cell 4 to store assembled job
	Inductive proximity sensor (Qty: 04) for digital feedback of all cells

Controller	
PLC	Siemens S7 1200
HMI	Siemens KTP 700 HMI (Basic)
Switch	5 Port unmanaged switch

I/O Link Infrastructure	
Master	i/o link based master with minimum 8 ports - M12
Hub	i/o link based hub with minimum 8 ports - M12 (Suitable for 16 inputs / outputs)
Smart Light	i/o link based smart light with minimum 7 colours

Pneumatics	
Pneumatic Valve Bank	5/2 Way double acting solenoid based valve bank with 4 valves
Pressure Switch	Digital Pressure Switch with analog output
Rotary Vane motor	Rotary vane motor with minimum bore of 25 mm and FCV
Auto Feeder Station - Bearing Auto Feeder	Pneumatic Guided Cylinder
	Inductive Proximity sensor to sense metallic objects
Pneumatic Gripper	Parallel gripper with minimum stroke of 10mm for each finger

Structure	
Total Dimensions	2000mm x 720mm x 1670mm (HT)
Approximate Weight	150 KG
Worksurface	Made in aluminum extrusions with minimum dimensions of 1000mm x 720mm
Operation Surface	Made in MDF of minimum 25mm thickness with minimum dimensions of 800mm x 720mm
Mobility	4 Qty castor wheels with brakes

Workstation	
CPU	Intel i5 Processor, 256 GB Hard Disk, 8 GB RAM
Operating System	Windows 10 Professional - Licensed Copy
Monitor 1	21 inch LED Monitor
Monitor mounting stand	Dual monitor mounting stand

Software	
PLC	Siemens TIA Basic - Perpetual

Utility Sheet for Assembly Station:

Description	Electrical Supply	Power Requirement
Assembly Station (CIM)	Single Phase, 230 V	2 kVA

Description	Foot Print			Box Dimensions				Electrical Supply	Power Requirement
	Length	Width	Height	Length	Width	Height	Approx Weight		
	mm	mm	mm	mm	mm	mm	KG		
Assembly Station for CIM	2000	800	1700	2200	1000	1900	220	Single Phase, 230 V	2 kVA

DISCLAIMER AND COPYRIGHT NOTICE

MECHATRONICS WEBPAGE

MECHATRONICS VIDEOS

sales@hytechdidactic.com

www.hytechdidactic.com