



About Hytech Automation



Established in year 1992

Manufacturing of trainer kits including CNC machines, Hydraulic – Pneumatic – PLC and HMI training Kits.

Manufacturing of CIM (Computer Integrated Manufacturing) Systems based on Industrial SCADA

Manufacturing of ASRS (Automatic Storage and Retrieval Systems) and various types of AGVs (Automated Guided Vehicles)

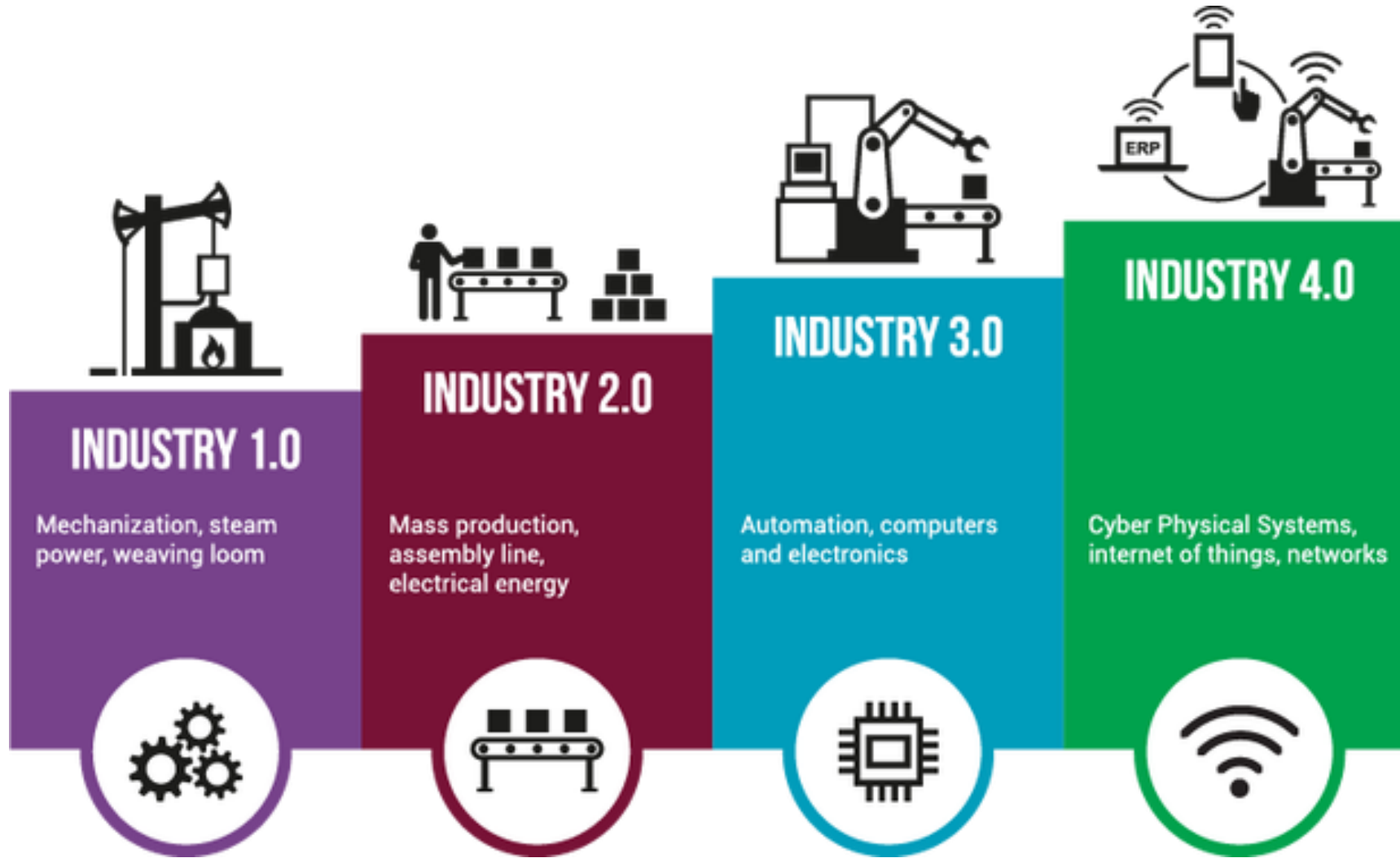
Complete Solution in Mechatronics Training and Application Engineering which include supply of training equipment, training the trainers, providing training to participants, complete operation of lab equipment with necessary maintenance for a period up to 3 - 5 years

Providing similar solutions in few of the leading manufacturing companies such as:

- Maruti Suzuki – Manesar
- Mahindra and Mahindra – Mumbai
 - Bosch – Nashik
- iAce (International Automobile Center of Excellence) – Gandhinagar
 - Ramakrishna Mission Polytechnic College – Chennai
 - Indo German Tool Room - Ahmedabad



What is industry 4.0





Key Features of Industry 4.0



- One of the key features of Industry 4.0 is the creation of highly automated industries through human-machine interaction
- Technological progress has created several advantages for business world; new concepts such as digitalization, Internet of Things (IoT) and Cyber Physical Systems (CPS) have gained importance across industries including manufacturing
- Industry 4.0 will play a significant role in transforming traditional companies into Smart Factories with the help of Internet of Things (IoT) and Cyber Physical Systems (CPS)

- **Cyber Physical Systems:**

Cyber-Physical Systems (CPS) comprise interacting digital, analog, physical, and human components engineered for function through integrated logical platform. These systems will provide the foundation of our critical infrastructure, form the basis of emerging and future smart manufacturing factories

- **industrial internet of things (IIoT)**

The industrial internet of things (IIoT) is the use of smart sensors and actuators to enhance manufacturing and industrial processes. Also known as the industrial internet or Industry 4.0, IIoT leverages the power of smart machines and real-time analytics to take advantage of the data that dumb machines have produced in industrial settings for years.

Key PILLARS of Industry 4.0



Industry 4.0 is a network of intelligent devices connected to form systems that monitor, collect, exchange and analyze data. Each industrial IoT ecosystem consists of:

- Intelligent assets that can sense, communicate and store information about themselves
- Public and/or private data communications infrastructure
- Analytics and applications that generate business information from raw data; and
- People



What CONCEPT do we offer in Industry 4.0



- Data Collection and Dynamic Data Monitoring
- Cloud Computing
- Predictive Maintenance
- Product / Job lifecycle management
- Warehouse / Storage Data
- Manufacturing Process data related with the assembly cycle



What Technology do we offer in Industry 4.0



- Top End Siemens PLC (S7 1500)
- Licensed Cloud Server from Siemens / Amazon
- Distributed i/o system with profinet communication protocol
- Electrical actuators
- Analog signal with real time connectivity
- Positional data of linear slides
- Industrial SCADA with Siemens WinCC Advance
- Unique identification system
- Time stamp for the process
- HMI for operational control and settings
- Vision Inspection System
- Six Axes Industrial Articulated Robot (Make: Siemens)
- OPC-UA connectivity
- Dynamic Warehouse / Inventory Data
- Dynamic Inspection Data in realtime

What DATA POINTS do we collect in Industry 4.0



- Sensor Data
- Barcode Data
- No. of Jobs Processed
- No of jobs rejected
- No of jobs assembled
- No of assemblies depending on the various job sizes
- Pneumatic pressure at which the assembly was carried out
- Temperature at which the assembly was carried out
- Height of the assembled unit
- Variations in Type 1 / 2 / 3 assemblies
- No of Type 1 / 2 / 3 assemblies
- Processing time of station 2 / 3 / 4 and 5
- Robot Cycle time
- Time stamp on each assembly
- No of jobs available in storage
- Status of each input as well as output of Remote i/o
- Status of each solenoid valve in a valve bank



Station 1

- Control Station
- Siemens S7 1500 PLC
- OPC UA
- Siemens SCADA (WinCC Advance)
- Remote i/o communication
- Solenoid Valve Banks (Festo) with communication protocol
- Barcode Printer





THE PROCESS



Station 2

- Job Feeding
- Job sorting based on size (3 Variations)
- Barcode Reading
- Assigning Unique ID
- Assigning Size to UID

Station 4

- Bearing Assembly
- Time stamp on Assembly
- Pneumatic Pressure stamp on assembly
- Ambient temperature stamp on assembly
- Cycle time stamp on assembly
- Inspection (Height of final assembly) data

Industrial Robot Station

- Sorting of bearings
- Assembly of bearings
- Works in collaboration with Stations 4 and 5
- Robot cycle time data
- Robot idle time data

Station 3

- Vision Sensing
- Sorting of Bearings based on data from vision sensing
- Stacking of bearings based on the type (3 variations)

Station 5

- Automatic storage of assembled parts
- Warehouse management data
- Status of each storage unit
- Linear scale data (Positional data)

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Industry 4.0



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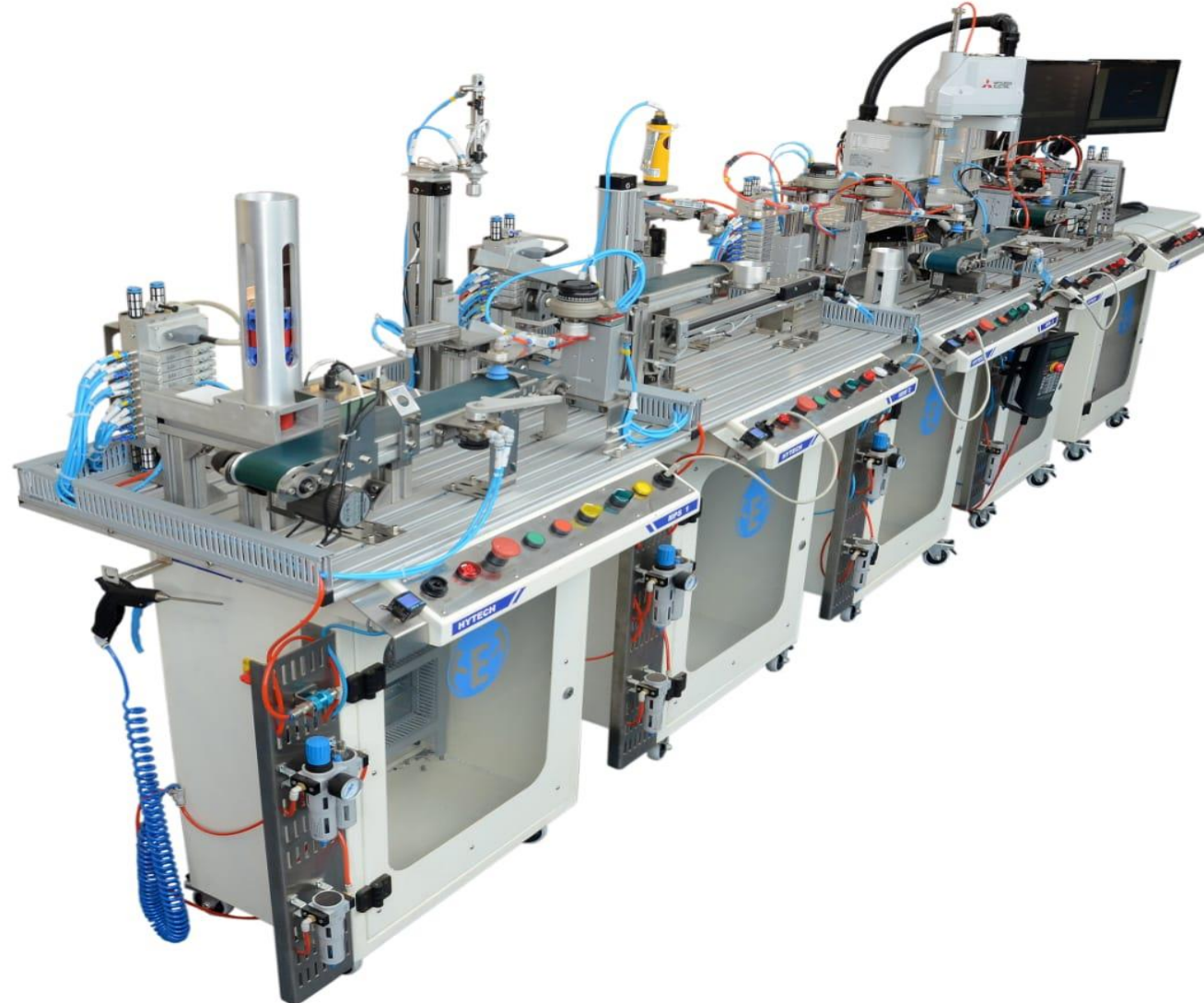
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Industry 4.0



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Industry 4.0





Why Hytech in Industry 4.0



- Realtime process which makes sure that students get the hang of actual industrial practices
- Latest technological products such as Siemens S7 1500 PLC, remote i/o with profinet protocol, Fanuc industrial articulated robot with SCADA connectivity, Industrial SCADA
- Industrial cloud with perpetual validity
- Cloud computing
- Cloud based operation
- Industrial IOT
- Exposure to industrial practices such as UID based on barcode as well as data storage based on each and every manufacturing / assembly process
- Not only demonstration but also actual flexibility in operation
- Covers most of the points of industry 4.0 not only in theory but also in hardware based application

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Operational Video

Video Link: <https://youtu.be/S1cjG3WzDSY>





Thank you!

