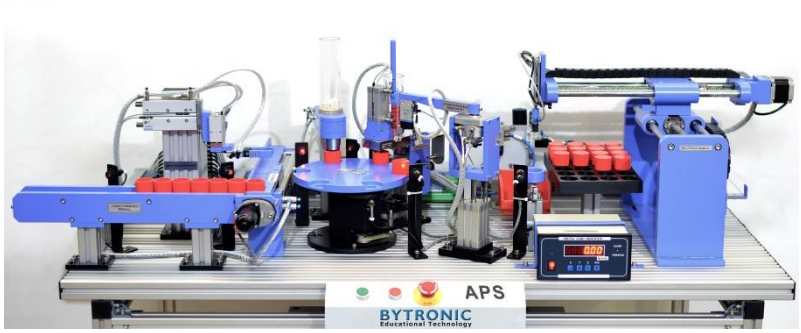
Automated Production System APS



Key Features:

- Complete system with pick and place, sorting, and storing
- Indexing system
- Linear pick and place
- Belt conveyor
- Six station rotary unit
- Filling unit
- Weighing module
- Horizontal transfer unit
- Capping unit
- XY palletiser

The Automation Production System is comprised of modules with varying functions that are electrically and mechanically linked, and when combined simulate an actual industrial process such as material dispensing, sorting of products, processing, and storing. The APS is designed to enables students to acquire knowledge of automation and production systems using PLC programming with the aid of sensors and actuators in the area of mechatronics.

The APS is constructed on an aluminium frame and can be mounted on a bench or supplied with a support stand. The APS has an operating console with on/off switches, emergency stop switch and PLC control with the I/O connections, electrical and pneumatic.

The functionally of the APS is to allow students to study the automation process and to understand how to control various modules to ensure they work together. The APS uses a bottling plant as the process with containers being placed onto the conveyor belt. The presence/absences of a container is detected using sensors and if present the containers are moved to the linear conveyor system. The linear conveyor moves each container onto the two axis pick and place module where the pneumatic gripper of the transfer unit picks up the container and places it onto the indexing rotary table. The motorised rotary module will index the container through to the volumetric filling modules where the container is filled. The container is then capped at the capping module and the containers are transferred from the rotary module to the weighing module. Once weighing is complete the XY palletising module will store the finished item in the pallet section.

Curriculum Coverage

- Automation principles
- Computer Integrated Manufacturing
- Sensor technology
- Pneumatics / electro-pneumatics
- Material dispensing and distribution
- Structure and system of automation systems
- PLC programming, simulation and testing.

Specification

Belt Conveyor	12 VDC, variable speed
Unloading Arm	24 VDC; Electro-pneumatic Controlled by a linear double acting and rotary actuator Electro-pneumatic angular double acting gripper No. of I/O elements – 2 inputs and 6 outputs
Six Station Rotary Unit	Motor driven 230 VAC, single phase Indexing sensor – inductive type I/O elements – 1 input and 1output
Filling Unit	24V DC; Electro-pneumatic Number of I/O demands 2 Inputs & 1 Output Pneumatically double acting cylinder
Weighing Module	230 VAC input power. Load cell with display Controller with display Seven segment five-digit numeric display Produces variable resistance value according to the weight of the object.
Horizontal Transfer Unit	Pneumatic Operated No of I/O elements - 2 inputs and 1 output
Capping Unit	24VDC; Pneumatically Operated Horizontal double acting cylinder (Cap locator) Vertical double acting flat cylinder (Cap Punch) Number of I/O elements – 3 inputs and 2 outputs
PLC	The Siemens S7-1200
XY Palletize	Control: PCB controller Two 5VDC Stepper motors Vertical flat type, double acting cylinder Two inductive sensors: Used to detect the X, Y-axis home position Gripper: Suction cup Pallet with 24 positions
Linear Pick and Place	Pneumatic operated One vertical cylinder travel Gripper: Angular gripper No of I/O elements - 4 inputs and 3 outputs
Pneumatic Requirements	Operating Pressure: 6 Bar

Ordering Information

Model Number: APS

Bytronic Limited
124 Anglesey Court, Towers Business Park,
Rugeley, Staffordshire, WS15 1UL.
United Kingdom
Tel; +44(0)3456 123 155
Email: sales@bytronic.net Website: www.bytronic.net