



PHOTO: Parts Supply Process Station
(image for reference only, actual product may differ)

SYSTEM OVERVIEW

The **Parts Supply Process Station** is an advanced smart-factory training system designed for education in modern automated manufacturing environments. The system is configured to simulate real industrial production processes and enables integrated control, monitoring, and optimization of supply and handling operations using sensors, PLC control, vision inspection, and IoT-based technologies.

The station is built using industrial-grade components and convergence technologies such as IT, software, automation, and IoT to support intelligent manufacturing practices. It enables centralized control, production simulation, process monitoring, and data storage within a unified software environment.

For user safety and operational reliability, the system is housed in a protective enclosure with organized cable-duct routing for electrical wiring and pneumatic lines. The training system allows monitoring and operation through dedicated software and mobile devices, while also supporting manual part verification through an integrated vision-inspection section.

All components are newly manufactured and assembled into a fully integrated system that operates as a unified automated production facility suitable for smart-factory and Industry

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.



Export Sales: +91-9829132777
India Sales: +91-9588842361



IT-2013, Ramchandrapura Industrial Area,
Sitapura Extension, Jaipur-302022, India.



info@tesca.in
www.tescaglobal.com

4.0 training.

TECHNICAL SPECIFICATIONS

Sl. No.	Item Name	Technical Specifications	Qty
1	Palette Supply Cylinder Unit	Cylinder Ø≈20 mm, stroke ≈125 mm; allowable pressure 1.0 MPa; 2 flow-control valves; 2 magnetic sensors (NO, LED, 12–27 V DC/AC); tower storage rack.	1 set
2	Conveyor Up/Down Transfer Unit	Cylinder Ø≥16 mm, stroke ≥100 mm; allowable pressure 1.0 MPa; 2 flow-control valves; magnetic sensor (NO, LED, 12–27 V DC/AC); PVC conveyor belt 0.8 × 86 × 466 mm; DC motor 24 V, 20 RPM; ≥4 ball bearings; AL6061 pulley drive; optical sensor 10–30 V DC, sensing 50 mm.	1 set
3	Palette Stacking Cylinder Unit	Cylinder Ø≥16 mm, stroke ≥50 mm; allowable pressure 1.0 MPa; 2 flow-control valves; optical sensor 10–30 V DC, 50 mm; 2 magnetic sensors (NO, LED, 12–27 V DC/AC); PVC stacking belt 0.8 × 12 × 581 mm; DC motor 24 V, 20 RPM; ≥4 ball bearings; AL6061 pulley.	1 set
4	Pneumatic Solenoid Valves	5/2-way double solenoid; aluminum sub-base; pressure 0.05–1.0 MPa; flow 700 L/min @0.5 MPa; response ≤18 ms; 24 V DC coil ±10%; LED indicator & surge protection; manual override.	3 ea
5	Air Preparation Unit	Regulator, filter, lubricator, gauge, hand valve; proof pressure 1.5 MPa; operating 0–1.0 MPa; set range 0.05–0.85 MPa; rated flow 800 L/min @0.6 MPa; filtration 10 µm.	1 set
6	Machine Control Section	Main power switch; auto/manual selector; 2 push buttons; emergency stop; 2 pilot lamps; buzzer indication.	1 set
7	PLC Control Module	Mitsubishi MELSEC compatible PLC; supply 100–240 VAC 50/60 Hz; outputs 5/24 V DC (3 A/0.6 A); 5-slot base; cyclic CPU; languages ladder/SFC/ST/function/list; USB & Ethernet; program 30k steps; I/O devices 8192; I/O points 4096; internal relays 9216; input modules 2×16 pt 24 V DC; output module 16 pt.	1 set
8	GOT Touch Monitor	8.4" TFT LCD; 640×480; 65,536 colors; LED backlight; resistive touch; 57 MB storage/128 MB runtime; RS-232, RS-422/485, Ethernet, USB, SD; built-in buzzer; supply AC 100–240 V.	1 set
9	Real-Time Monitoring IP Camera	1/2.8" CMOS ≈2 MP; 3.8 mm lens; H.264/M-JPEG; RJ-45 & BNC; up to 1920×1080; dual stream; 10/100Base-T; PoE (IEEE 802.3af).	1 set
10	Station Case & Structure	Approx. 800(W)×810(D)×1500(H) mm; aluminum profile frame; transparent safety cover; lockable casters; double doors; tower light; cable ducts; SMPS 24 V DC ≥2 A.	1 set
11	Vision Camera & Lighting	Smart camera with processor; 1/3" CMOS color; 6.2 mm liquid lens or 8 mm manual; 640×480 & 800×600; ring LED light; up to 40 fps mono / 24 fps color; inspection tools (pattern, color, edge, measurement, OCR, blob); protocols OPC UA, EtherNet/IP, PROFINET, Modbus TCP; IP65; 24 V DC supply.	1 set
12	Emulation Tool &	Spreadsheet interface; inspection & analysis tools; runtime display setup; geometry/math functions; FTP & formatting; coordinate	1 set

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Software	transform; SDK; Ethernet/serial I/O; data storage & analytics.
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RANGE OF EXPERIMENTS

- Smart-factory supply process automation
- PLC-based process control and sequencing
- Conveyor and cylinder automation control
- Pneumatic valve and actuator operation
- Vision-based part inspection and verification
- SCADA monitoring and data acquisition
- IoT-based manufacturing data monitoring
- Production simulation and process optimization
- Sensor integration and automated sorting
- Integrated safety and emergency control logic

FEATURES

- Smart-factory ready integrated training station
- PLC, HMI, vision and IoT based unified control
- Real-time monitoring and production simulation capability
- Mobile-device compatible monitoring and control
- Modular pneumatic and sensor-based automation
- Industrial communication protocol support
- Built-in safety enclosure with cable-duct routing
- Vision inspection system for manual and automatic verification
- Fully integrated system operating as a real manufacturing facility
- Suitable for advanced automation and Industry 4.0 training

SERVICES REQUIRED

- Standard 230 V AC power supply
- Proper earthing/grounding required

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