

Lab4Schools  
Lab Activity “Bottle Sorting Line”

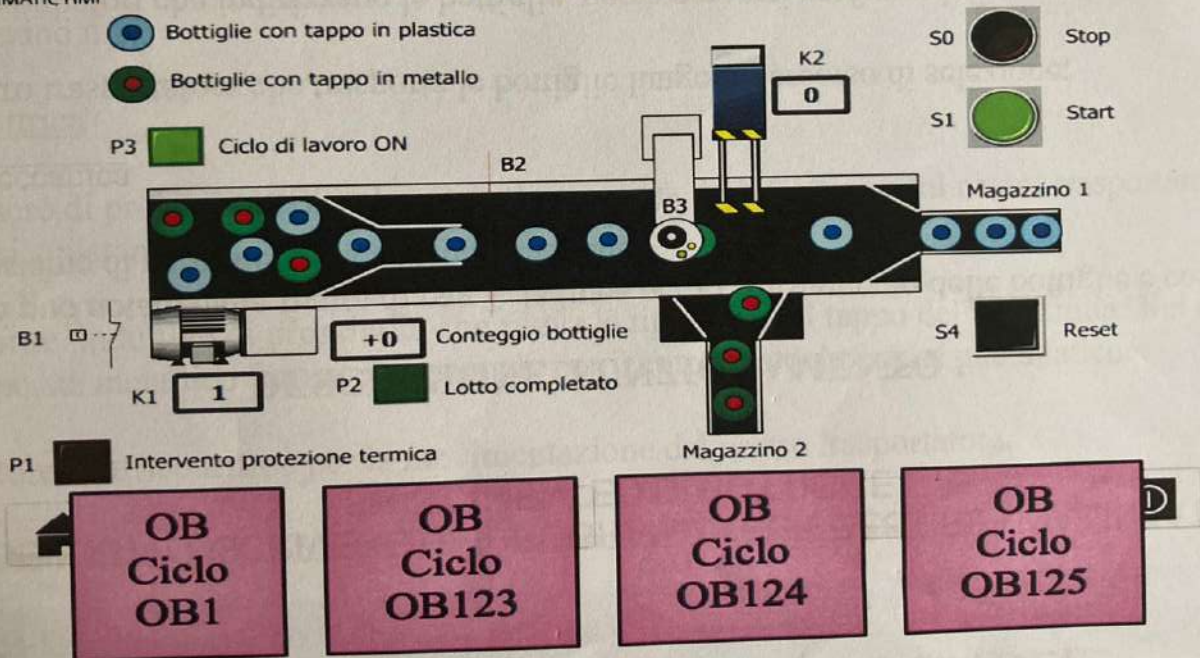


# LINEA DI SMISTAMENTO BOTTIGLIE ( BOTTLE SORTING LINE )

## ILLUSTRAZIONE LINEA AUTOMATIZZATA ( AUTOMATED LINE ILLUSTRATION )

SIEMENS  
SIMATIC HMI

### LINEA DI SMISTAMENTO BOTTIGLIE



# BOTTLE SORTING LINE

OBJECTIVE: WRITE A PROGRAM TO MANAGE A BOTTLE SORTING LINE

## DESCRIPTION OF OPERATION

As you can see from the figure on page 1, the bottle sorting line is made up of a set of mechanical and pneumatic parts.

### Mechanical part

- 1 conveyor belt transports the bottles along the sorting path;
- 3 conveyors direct the bottles towards preferential paths.

# BOTTLE SORTING LINE

## Pneumatic part

- 1 piston controlled by a electrovalve (K2) pushes the bottles with metal cap into warehouse (magazzino n.2);

## Electric part

- 1 proximity sensor (B2) which detects the presence of bottles on the conveyor belt of the sorting line.
- 1 inductive proximity sensor detects the type of bottle cap. If it is a metal cap, it provides a signal for control the pneumatic piston.
- 1 three-phase electric motor for moving the conveyor belt.
- Stop (S0), Start (S1), Count reset (S4) buttons
- Indicator lights Thermal protection intervention (P1), Batch completed (P2) Work cycle in progress (P3)

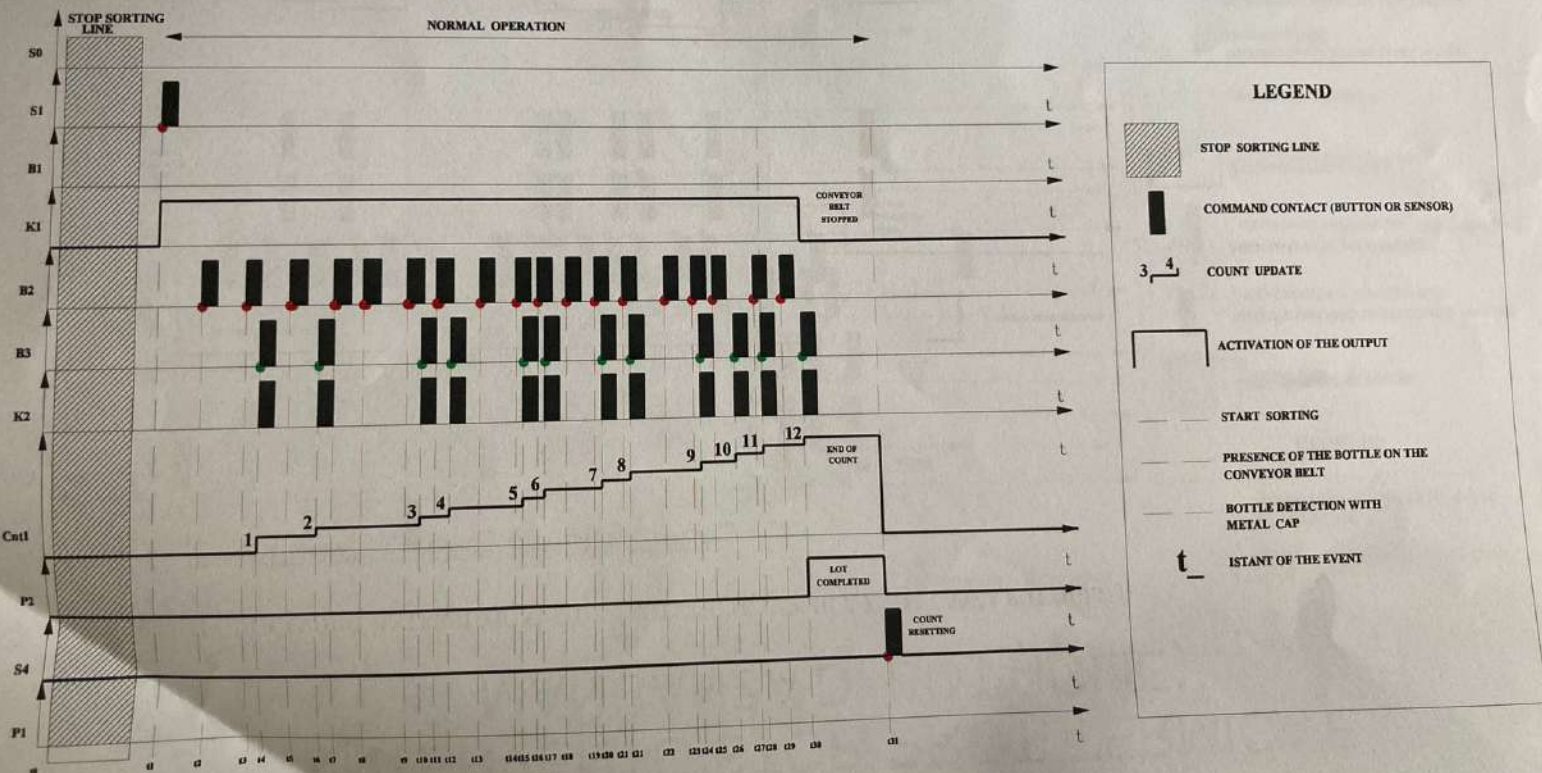
# BOTTLE SORTING LINE

## OPERATING MODE

- [1] The running and stop ping of the conveyor belt are controlled by two buttons Stop (S0) and Start (S1).
- [2] A proximity sensor (B2) detects the presence of bottles on the conveyor belt of the sorting line.
- [3] A proximity sensor (B3) recognizes bottles with metal caps (B3 = on) and generates a command to activate the solenoid valve (K2) which activates the piston, pushing the bottle towards warehouse n. 2.
- [4] Otherwise (B3 = off), the bottle continues to warehouse n. 1.
- [5] If more than 10 seconds pass without sensor B2 detecting the passage of a bottle, the conveyor belt must stop.
- [6] The Reset button (S4) must reset the bottle count.
- [7] The P1 warning light must light up thanks to the intervention of engine, P2 when the batch of 12 bottles has been reached and P3 when the processing is in progress.

# WORKING DIAGRAM OF SORTING LINE (NORMAL OPERATION)

WORKING DIAGRAM (NORMAL OPERATION)



# WORKING DIAGRAM OF SORTING LINE (WITH STOP, TERMAL PROTECTION AND NO BOTTLES)

WORKING DIAGRAM (INTERRUPTIONS WITH STOP, TERMAL PROTECTION AND NO BOTTLES)

