LAB 06
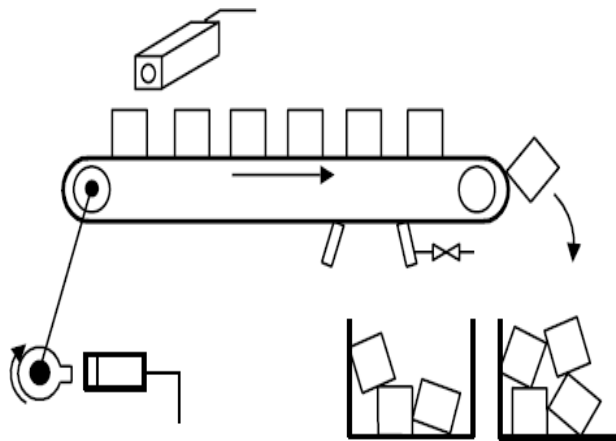
Control the parts sorting mechanism through shift register

OBJECTIVE:

- To practice the utilization of the shift register
- To develop the ladder logic
- To simulate the logic
- To download the program in PLC and check the results in real time

TASK:

In this application effective product are being detected and rejected from those being carried on the conveyor.

Photoelectric sensor PH1 serves as the data input to the shift register. The signal output from this sensor turns ON when a defective product has been detected; otherwise it remains OFF.

Photoelectric sensor PH2 is used as the clock generator that serves as the clock input to the shift register. It generates one pulse each time the product, spaced at a fixed interval from each other has traveled a predetermined distance.

INPUT

Photoelectric Sensor PH1:

- ➢ Detects defective products.
- ➢ When a defective product passes, it sends a signal ("ON" state) to the PLC.
- ➢ Otherwise, it remains "OFF" for normal products.

Photoelectric Sensor PH2:

- ➢ Acts as a clock pulse generator for the shift register.
- ➢ Each time a product moves a fixed distance, this sensor sends a clock pulse to the PLC to shift the data in the shift register.

SIMATIC MANAGER STEP 7 PROGRAM:

Network 1 : CONVEYER BELT SET

```
 I124.0                                        Q125.0
"START"                                        "BELT"
 ┤ ├                                           ─( )─
```

Network 2 : INPUT SIGNAL DETECTION NETWORK

```
 I124.2            M0.1          SHR_W
"PH 2"            ─( N )─      EN      ENO
 ┤ ├
                             MW1 ─ IN    OUT ─ MW1

                          B#16#1 ─ N
```

Network 3 : SHIFT REGISTER OPERATION NETWORK

```
 I124.1
"PH 1"                                          M1.7
 ┤ ├                                           ─( )─
```

Network 4 : REJECTION MECHANISM CONTROL

```
                                               Q125.1
                                            "DEFECTIVE
          M1.2                                DISCARD"
         ┤ ├                                   ─( )─
```