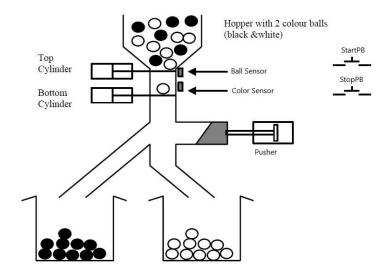
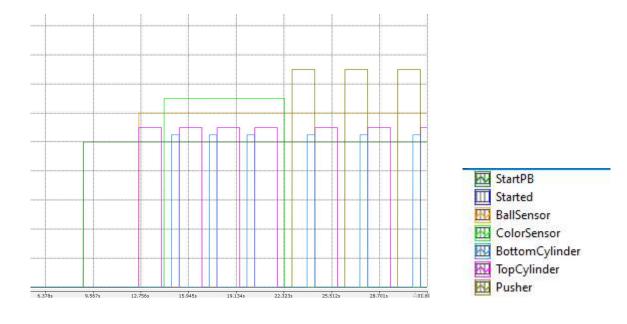
## **Ball Sorter Mechanism**



The system should sort out the black and white balls into two different containers

The start button will start the operation. Ball Sensor will sense the presence of the ball in the hopper. The top solenoid will release the ball for the colour sensor to differentiate the colour before being release into the container.

## Time diagramm:



```
PROGRAM MAIN
VAR
      // buttons
                               : BOOL;
     StartPB
StopPB
                               : BOOL;
     // sensors
BallSensor
                               : BOOL;
     ColorSensor
                               : BOOL;
    Pusher
                               : BOOL;
      // HW outputs
                               : BOOL;
     TopCylinder
     {\tt BottomCylinder}
                               : BOOL;
     // Aux. objects
Started: BOOL;
     DelayOn: BOOL;
     tonDelayTopCyl: TON;
tonWhiteBall: TON;
tonBlackBall: TON;
     tonDelay500ms: TON;
     tonPusher: TON;
END_VAR
```

```
Start condition
                  StopPB
   StartPB
                                                                                                                                                  Started
     -11-
                                                                                                                                                    ()
   Started
     -1 1
 Top cylinder
                BallSensor
                                                                                                                                                TopCylinder
   Started
                               DelayOn
     -11
                   -1 1-
                                 1/1
                                                                                                                                                   -()
 TopCylinder
     -||-
 Timer
                 tonDelayTopCyl
 TopCylinder
                     TON
     -1 1
      T#1.55 -
 Delay
 tonDelayTopCyl.Q
                    tonDelay500ms.Q
                                                                                                                                                  DelayOn
      —I I-
                         -1/1-
                                                                                                                                                   —(( ))
   DelayOn
 White & black balls
                                 tonWhiteBall
   Delay0n
                  ColorSensor
                      T#500ms
                                 tonBlackBall
                                     TON
                  ColorSensor
                     -1/1-
                                             Q
                               PT
                     T#500ms -
 Bottom Cylinder
 tonWhiteBall.Q
                                                                                                                                              BottomCylinder
                                                                                                                                                   -( )
      -
 tonPusher.Q
     - -
 Delay - 0.5 sec.
                    tonDelay500ms
 BottomCylinder
                        TON
      T#500ms -
 tonBlackBall.Q
                                                                                                                                                   Pusher
      -
                                                                                                                                                   —(( ))
                            tonPusher
                          TON
IN PT
```