

Construction of control systems of Mechatron pneumatic devices

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Abstract: Mechatron devices of management pneumatic hydraulic of types used without PLC controller on the side devices automatic process organize to reach see we went out Then no results that's it showed that devices quickness in providing manage devices optimization seeing we went out

Key words: press machine components, PLC wires of the pneumatic press machine, PLC ladder of the machine logic

Press button is this the process start or to stop for used management elements . Press button they are usually open contact and usually closed contact Usually open contact basically to work drop off button is used and usually closed contact basically to stop button is used . of our project main process start for two usually open from contacts we used

PLC wiring of pneumatic press machine . Pressing of the car performance By Siemens S7-1200 PLC complete control done . It is 24V DC power source with works This 4 entries in process used 1 click button and 3 proximity the key used These 4 are addressed I0.0, I0.5, I0.7 and I1.1 inputs with connected . Exits place outputs with connected , output PLC addresses Q0 ,0 from to Q0.5 .

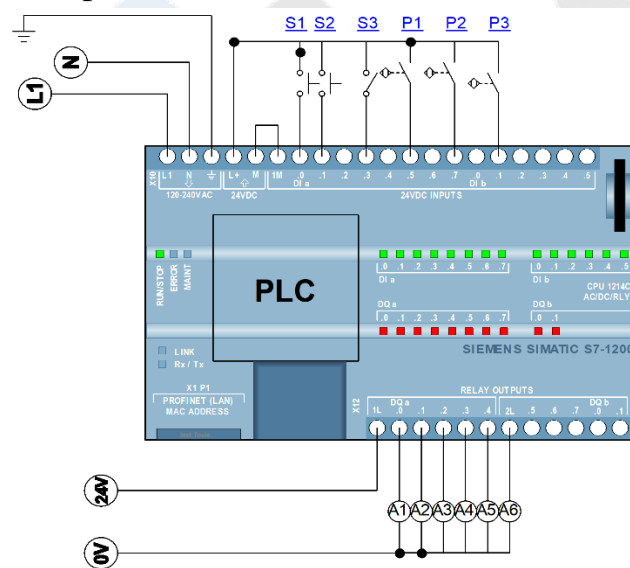


Figure 1: PLC connections

S1 button when pressed it will signal I0.0 , like so so P1, P2 and P3 are close signals to sensors I0.5, I0.7 and I1.1 . This inputs again is processed and PLC in the program to the specified PLC logic according to signal from A1 to A6 has been place

to the coils sends[1].

PLC ladder of the machine logic . PLC ladder logic car of the application function describes . In the PLC loaded logic depending on the process will be done . to the PLC connected all access and exits in logic remind transition it is necessary with only all things in the car will be done . Wrong program in progress wrong to the function take will come and this necessary to the result take not coming can.

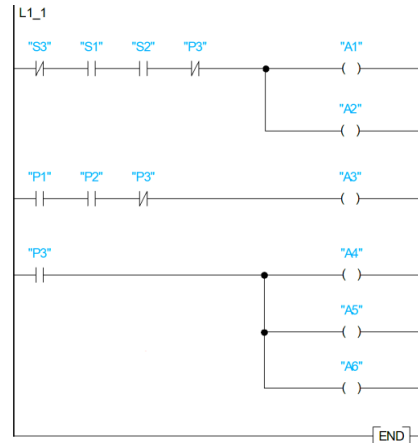


Figure 2: PLC Ladder Logic

Pneumatic scheme final the process two bilaterally cylinders , 5/2 directions manage klapni , closeness sensors , flow manage valve and energy source compressor such as components using done increases . All components movement for transition task which performs the air lines (air through hoses). is connected . This circuit pressure 5 bar with works Direction control to do valves inside of reels movement who manages the solenoid to work drop off method have

Pneumatic press machine work principle . Pneumatic 5 bar is compressed into the system the air supply is given All cylinders standard in case When buttons S1 and S2 process if clicked starts . These are PLC inputs activates and to PLC programming according to , A1 and A2 relay activated [2].

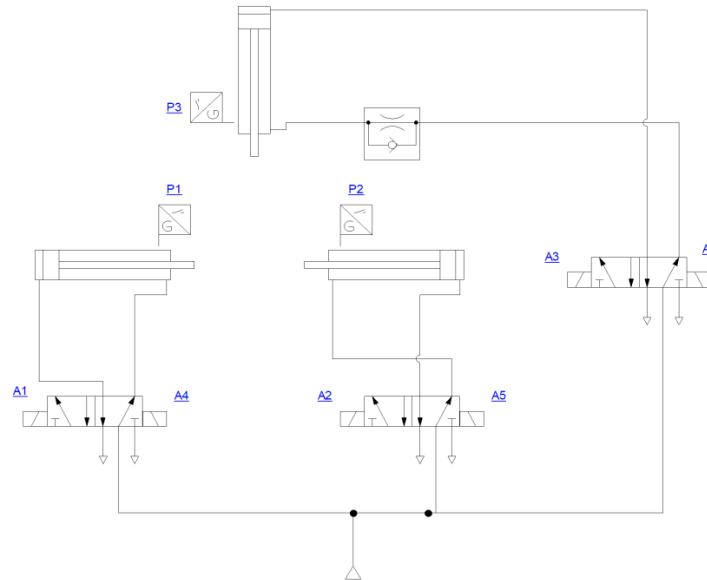


Figure 3: Pneumatic schemes connections

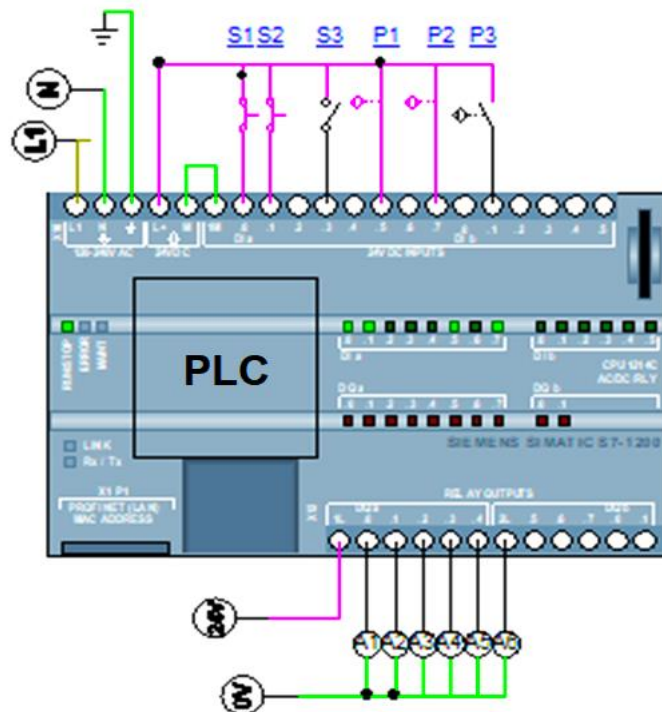


Figure 4: In a PLC click buttons

This place forward shift which activates cylinder 1 and cylinder 2 for direction manage of valves solenoid activates . 1st cylinder and 2nd cylinder pressing of the car the door was

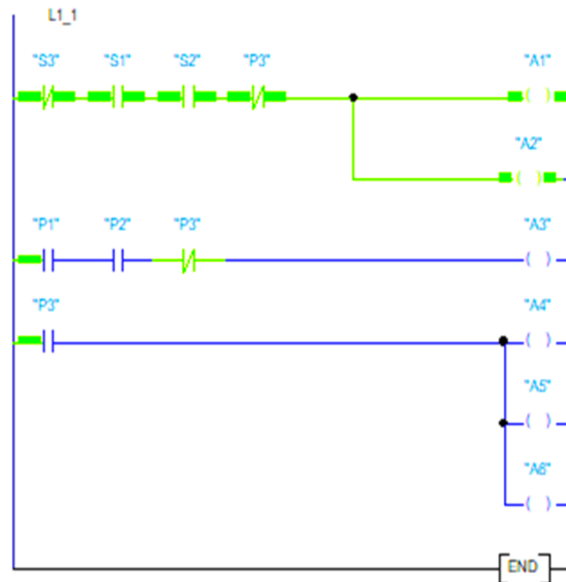


Figure 5. PLC logic to execute cylinder 1 and cylinder 2

both cylinder 1 and cylinder 2 close . of cylinders last status closeness sensors by felt

Next process both closeness only when it receives a signal from the sensor starts . Safety principle account received without , we proximity signal status from sensors determination for from PLC logic we use

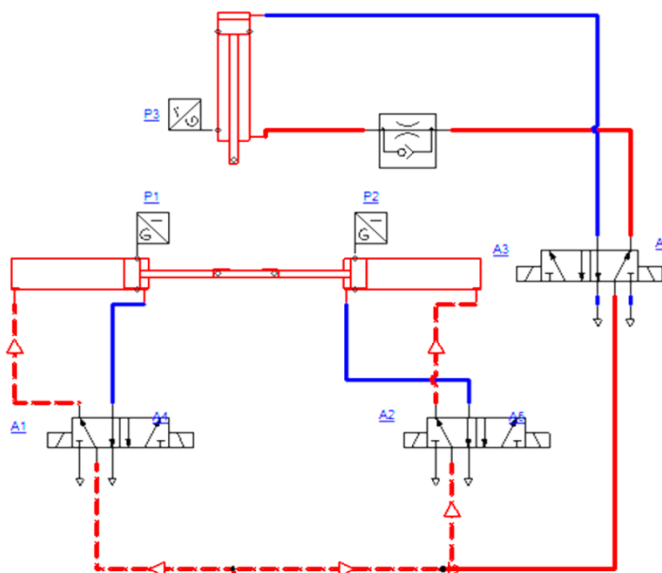


Figure 6: Pneumatic operation of cylinder 1 and cylinder 2

Proximity sensor signals acceptance from being done then click process starts . This is different pneumatic cylinder by done increased . Sensor signals relay A3 activates this while solenoid valve the cylinder to redirect possibility will give . Flow management valve using cylinder regularly to power relatively slowly movement does Stream manage valves gas butterfly valve using the voice reduce through of the

cylinder strength reduces Clickable to components depending on the valve is adjusted , like so , the power is also adjusted[4] .

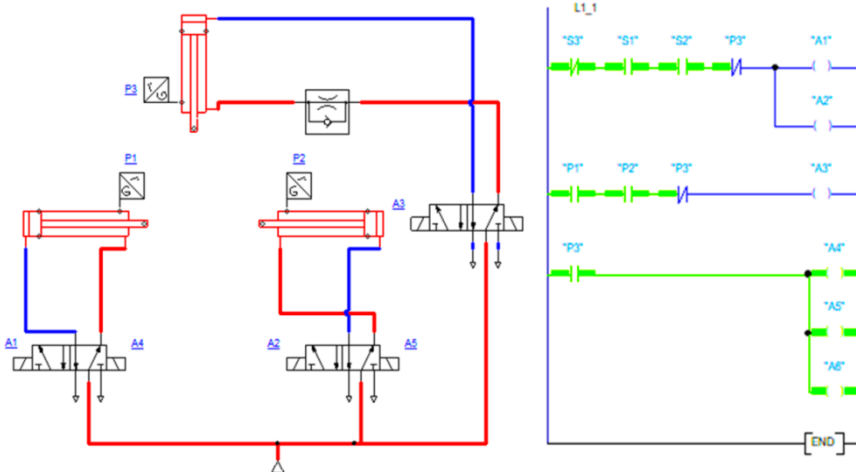


Figure 7. Operation cycle click , PLC logic

Press of the cylinder last the situation is close sensor by it is felt . This closeness sensor the cylinder transfer need has been sure the distance determines If the cylinder last position if , closeness sensor A4, A5 and A6 relay activates . That's all three cylinder home / default to the situation to return and one the cycle to finish forced does S1 and S2 start buttons again click through cycle is repeated[5] .

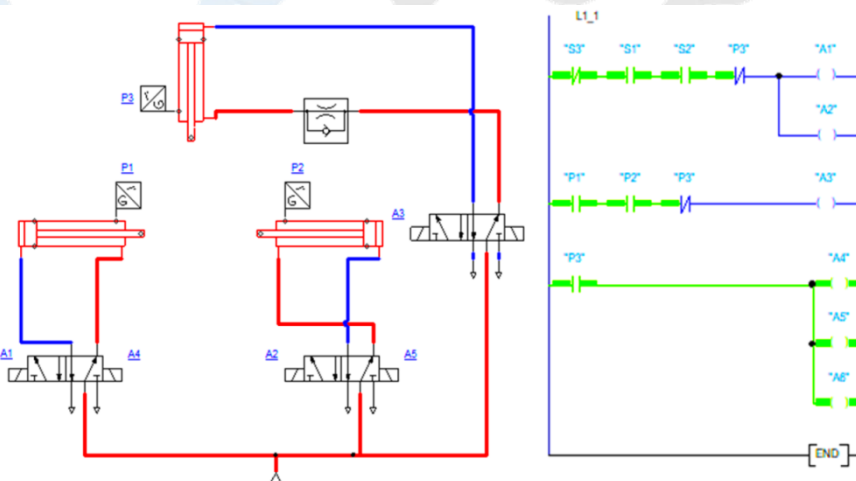


Figure 8. Back to cycle makes sense execution , PLC logic

If we process tools in the middle wants to stop If so , do it during desired at the time the process to stop S3 button for click need If S3 is from the process before activated if , the whole process won't start because it 's emergency to stop button task performs This is also this in progress applied safety measures is one[6].

Pneumatic of the car performance basically mechanic in workshops two the component combine for in industry is used . This operations safe perform for we are pneumatic systems and from a combination of PLC we used We also have cars and employees protection to do for some prophylactic from blockages we used.

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