

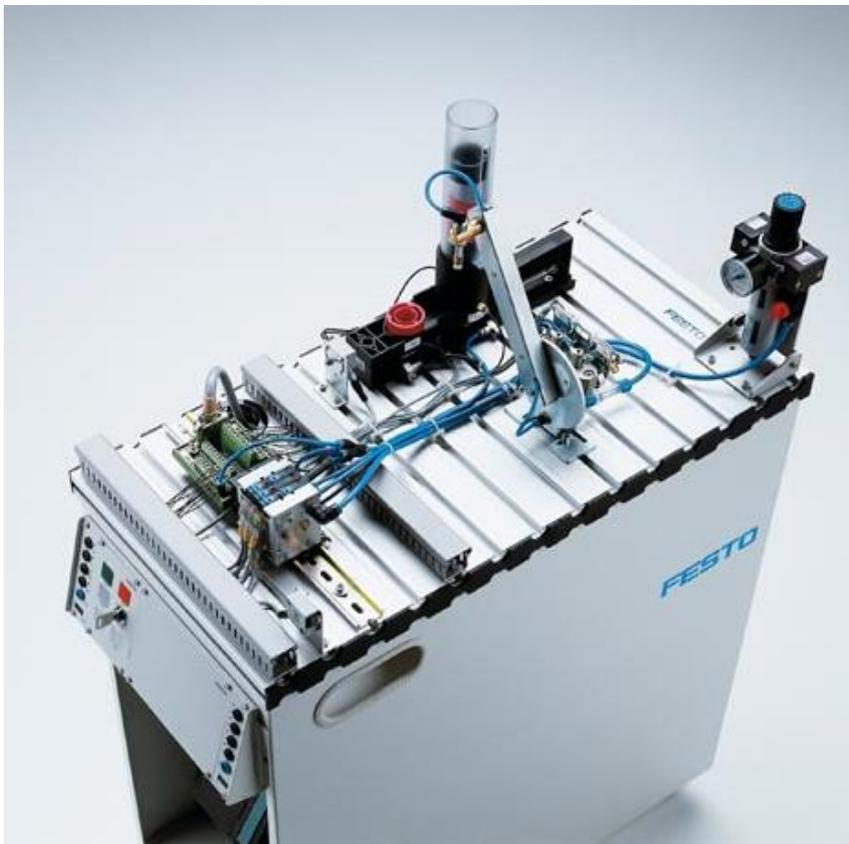
SW Test project for all participant

Programming and commissioning of a distribution station

Maximum time: 60 minutes

Situation

You have been given the task of programming and commissioning a station that has been delivered assembled. The station will be purchased by a customer in France to partially automate a production line.



Task

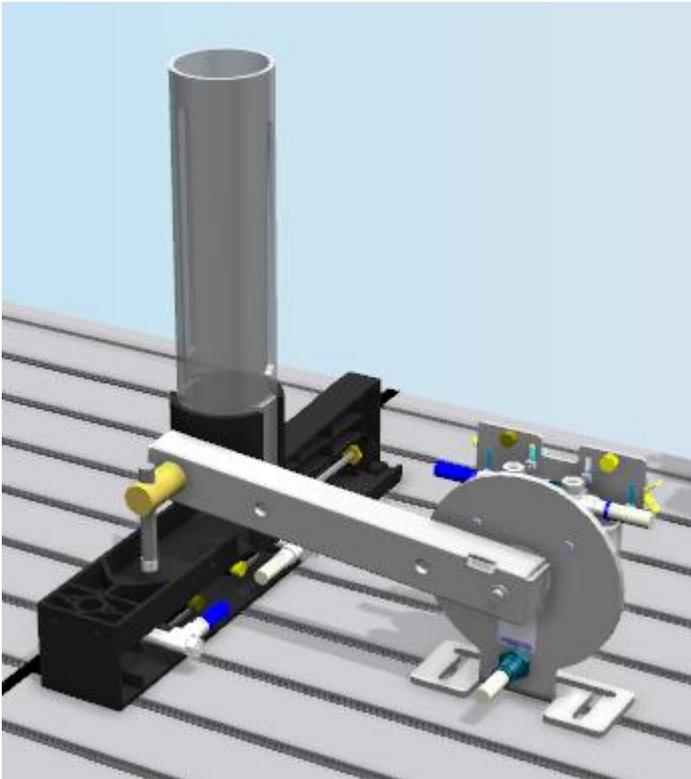
Create a programme so that commissioning is made easier for the customer.

Your task is complete when:

1. The correct execution of the program with PLC activation (based on evaluation with PLC) is guaranteed

The station will be sent to the customer as soon as you are finished. You will have no opportunity to make improvements later.

Initial position



- Ejecting cylinder is extended
- Rotary drive is in position “magazine”
- Vacuum OFF
- No workpiece on the station

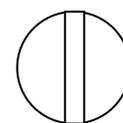
Allocation I/O terminal

Station - Byte 0

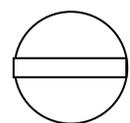
I/O Terminal (IN)	Comment – Signal 1 indicates	I/O Terminal (OUT)	Comment – Signal 1 set
DI 0		DO 0	1M1 Ejecting cylinder push out workpiece
DI 1	1B2 Ejecting cylinder extended	DO 1	2M1 Vacuum on
DI 2	1B1 Ejecting cylinder retracted	DO 2	2M2 Ejection impulse on
DI 3	2B1 Workpiece gripped	DO 3	3M1 Swivel drive to magazine
DI 4	3B1 Swivel drive in magazine position	DO 4	3M2 Swivel drive to downstream station
DI 5	3B2 Swivel drive in downstream station pos.	DO 5	
DI 6	B4 Magazine empty	DO 6	
DI 7		DO 7	

Control console - Byte 1

I/O Terminal (IN)	Comment – Signal 1 indicates	I/O Terminal (OUT)	Comment – Signal 1 set
DI 0	S1 START Button	DO 0	P1 START indicator light
DI 1	S2 STOP Button (NC)	DO 1	P2 RESET indicator light
DI 2	S3 Key Switch MAN/AUTO	DO 2	P3 Q1 Indicator light
DI 3	S4 RESET Button	DO 3	P4 Q2 Indicator light
DI 4		DO 4	
DI 5		DO 5	
DI 6		DO 6	
DI 7		DO 7	



AUTO



MAN

Evaluation form SW Test project for all participant

Programming and commissioning of a distribution station

Competitor:

Expert at the evaluation (name, signature):

Maximum time: 60 minutes

Time needed:

Description / PLC Function	Result	Mark Awarded
 <p>Preparation: Connect the PLC board with the I/O terminals, switch key to the position AUTO, start the PLC, no programming cable and no communication between PC and PLC, valve for air opened. Swivel drive between two positions. Magazine is empty. You will get time to check that before the evaluation!</p>		
Lamp Q2 ON		0.4
Switch key to the position MAN then lamp RESET flashing with 2 Hz and lamp Q2 OFF		0.4
Press the RESET button then the station goes into initial position, lamp RESET OFF and lamp Q2 ON		0.4
Switch key to position AUTO then lamp START ON and lamp Q2 OFF		0.4
A: Press the START button		
If workpiece present the continue to B:		0.4
If no workpiece the continue to C:		0.4
B:		
Lamp START OFF		0.4
The swivel drive goes into downstream station position		0.4
Workpiece is pushed out of the magazine		0.4
The swivel drive goes into magazine position		0.4
The workpiece is held		0.4
The ejecting cylinder is advanced		0.4
The swivel drive goes into downstream station position with the workpiece		0.4
The workpiece is released with an ejection pulse for 3 sec.		0.4

The swivel drive goes to magazine position and lamp START ON		0.4
Continue to A:		0.4
C:		
Lamp START OFF and lamp Q1 flashing with 1 Hz		0.4
Put a workpiece into the magazine then lamp Q1 OFF and lamp RESET ON		0.4
Press the RESET button and lamp RESET OFF		0.4
Continue to A:		0.4
Total PLC Function		8

The STOP button is not used.

Description	Result	Mark Awarded
Time evaluation only if the maximum number of points is achieved for PLC function 0.1 points for each minute gained		
Total time evaluation		2

Description	Result	Mark Awarded
Points for PLC function		8
Points for time evaluation		2
Total points		10