Test Project

Task A2

Mechatronics

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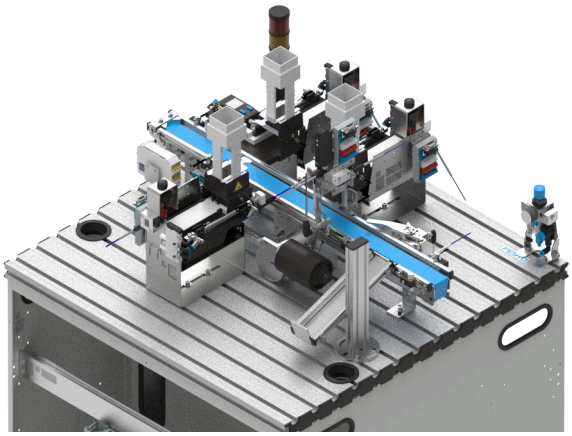
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Introduction to Test Project A2

Assembly, programming and commissioning of a 3 Magazine Station (3MS) with Conveyor and Modules - Customer change

TMAX	INFORMATION
180 min + 60 min	Also on file server

Scenario



The customer wants to modify their application and make the system more sustainable.

All components are to be mounted on a profile plate. Therefore, they want to relocate the slide gate to the conveyor belt side, with the option of integrating an additional system at the conveyor belt end without further modifications.

The conveyor belt end stays open.

Attention

Use the information from Task A1.
You will get a new set of guardrails and addional components like a switch.

Your Task

See "Your Task A1"

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Important notes about condition of the evaluation

Task A, SC-ID A1: Function Operation mode and signals

- Preparation: Connect the PLC board with the I/O terminals, switch key to the position AUTO (HMI), start the PLC, no programming cable and no communication between PC and PLC, valve for air is opened. Magazines, conveyor and slide are empty.
  You will get time to check that before the evaluation!
- (Second (2nd) chance possible)

Task A, SC-ID A2: Function Quality of production and signals

- Start from the initial position.
- Put at least four (4) types of WP into the Magazine 1, Magazine 2, Magazine 3*
- Attention: When the function stops with one (1) product in the station, the evaluation ends. (No manual help allowed)

Notes for Second (2nd) chance without Expert WP selection (reduced marks)

- Possible only once per Day.
- Start from the initial position.
- For the first (1st) order Competitor selects three (3) types of workpieces for the evaluation and puts them into **one (1)** magazine (first (1st) upside down, second (2nd) wrong coluor, third (3rd) correct).
- For the second (2nd) order Competitor selects one (1) type of workpiece for the evaluation and puts it correctly oriented and coloured into a **second** (2nd) magazine after the first (1st) order is completed.
- Attention: When the function stops with one (1) product in the station, the evaluation ends. (No manual help allowed)

Task A, SC-ID A3: I/O Allocation

Based on the allocation lists and the required place of the I/O – Terminals (IO-Boards and Modules)

Task A, SC-ID A4 and A5: HMI Design, PP-Judgement and Workplace management

Based on the SAG document

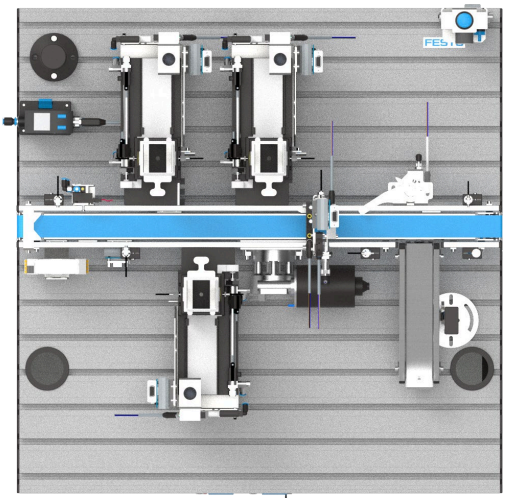
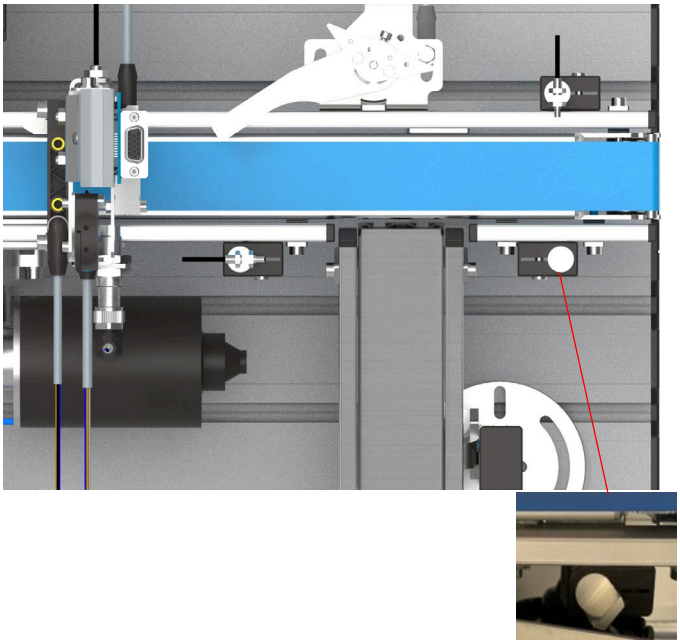
Task A, SC-ID A5: Working Time

Time evaluation (only if 100% of points is achieved for PLC with WP selection by Experts and simulation box function and at least 66,67% points each for judgement in professional practice, HMI design and Workplace management)

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Mechanical Part

Production line layout 3 – Magazine station (3MS)

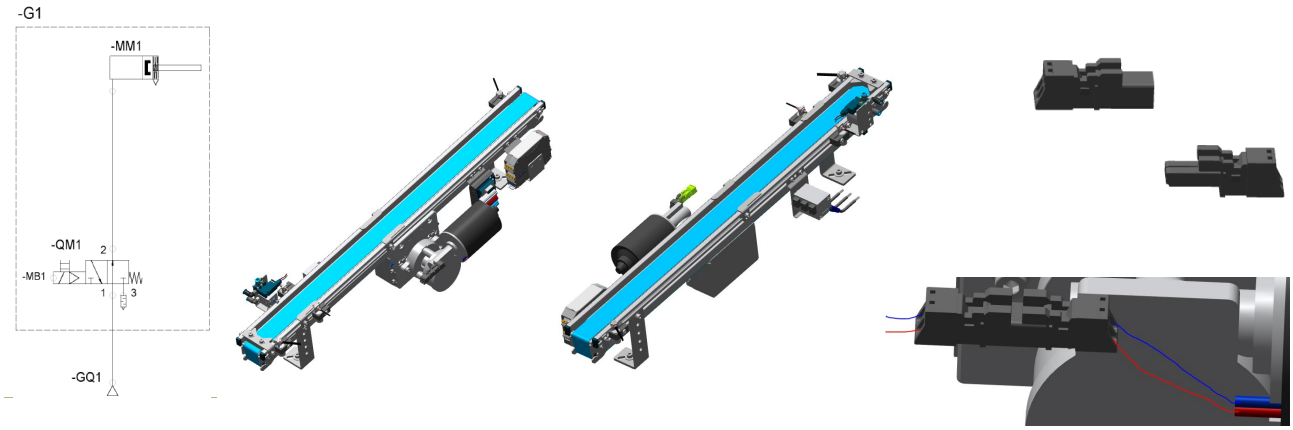
SYSTEM LAYOUT TOP VIEW WITH POS	SET OF GUARDRAILS AND LIGHT BARRIER
	

Initial position

MODULE: MAGAZINE IN 3MS
Module Conveyor: Motor off, Stopper extended, Empty (not relevant during the process, only for the initial position run)
Module Magazine 1 - 3: Ejecting arm retraced, Empty (not relevant during the process, only for the initial position run)
Module Conveyor: Switch open

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Details of Module: Conveyor 700x 40 (more on USB – stick) and wiring allocation mini terminal



PIN ON SUB-D	COLOUR DIN47100	PIN I/O MINI-TERMINAL	PIN - FUNCTION	PIN I/O TERMINAL FILL IN	FUNCTION
1	White	1	I0		WP at conveyor start/left
2	Brown	7	Q0		run belt into right hand side direction
3	Green	2	I1		WP at stopper position
4	Yellow	8	Q1		run belt into left hand side direction
5	Gray	3	I2		WP not at conveyor end position/right
	Pink	9	Q2		Retract stopper
7	Blue	4	I3		Switch extended
8	Red	10	Q3		Extend Switch
9	Black	5	AI0		Not used
10	Violet	6	AI1		Not used
11	Gray-rose	11+12	AQ0		Not used
12	Red-blue	24VA	VCC-Out		
13	White-green	24VB	VCC – In		
14	Brown-green	GND A	GND Out		
15	White-yellow	GND B	GND In		

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Allocation checked with Simulation Box on the wiring board

I/O TERMINAL: T1 (IN) 1 SIGNAL INDICATES	SEE TASK A1

I/O TERMINAL: T1 (OUT), 1 SIGNAL INDICATES	SEE TASK A1

I/O TERMINAL: T2 (IN) 1 SIGNAL INDICATES	
DI 0 – DI 6: See Task A1	
DI 7: Module Conveyor: Switch extended	

I/O Terminal: T2 (OUT) 1 signal indicates	
DO 0 – DO 4: See Task A1	
DO 5-DO 6: not used	
DO 7: Module Conveyor: Extend Switch	

I/O TERMINAL ANALOG: (IN) MEASURING VIA EXT. CONNECTORS	SEE TASK A1

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