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Automation | Industry 4.0

Acquire practical and project-oriented laboratory skills and expertise:

Automation trainers, mechatronics trainers, PLC trainers

IMS Industrial Mechatronics System – the New Generation
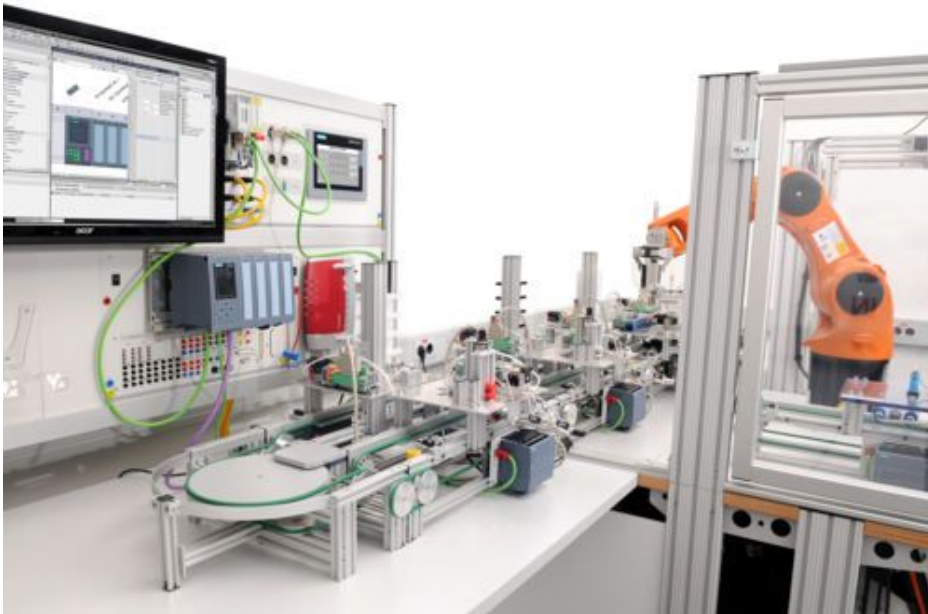
IMS Industrial Mechatronics System – the New Generation

With the "Industrial Mechatronics System" (IMS®) industrial automated production lines can be simulated in all their varying complexity. Thanks to its modular design IMS is a system which is perfectly suited for expansion. Consequently the system can be adapted to fit the needs of the students and can evolve to mirror their progress.

The new IMS generation excels due to the fact that the transport system features intelligent connection with a control system. The direct connection between the control system and the conveyor belt permits the system to go into operation quickly and easily.

- Having been exposed to industrial components used in the system trainees quickly adapt to real-life work after completing their training
- Realizing multi-phased training on only one system is also possible.
  - Gaining basic understanding thanks to operations with a microcontroller or LOGO!
  - Advanced training directly on the PLC of the transport system
  - In more advanced training it is possible to implement the networking of several transport systems with processing stations

- Small projects are carried out with single IMS components, especially when using the transport system or single stations
- Trainees are able to comprehend operating processes and signal state dependencies faster since they can read the I/O signal states directly on the system
- More complex exercises can be explored working with the IMS stations. Here additional functional interrelationships result from single IMS components interacting
- Since the systems are easily separated, there is a lot of room for creativity in customising lessons
- Complete and flexible production lines with a carousel system are set up by connecting the individual IMS stations. The multi-facetted projects are designed to develop solid know-how of the IMS stations.

Mechatronics Sub-Systems with Siemens PLC

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All IMS sub-systems are composed of several individual IMS components. They can be connected to any programmable logic controller by means of standard connectors. Before IMS sub-systems are connected in larger installations, the requisite knowledge and skills should be learned with the aid of multi-media UniTrain-I courses.

- IMS sub-systems with Siemens S7 and experiment manuals: it is of course also possible to follow the conventional route and connect a sub-system to an industrial-type programmable logic controller and put it into operation.

Training objectives for sub-systems:

- Analysis of functional relationships

- Set-up and adjustment of sensors

- Introduction to electrical and pneumatic function modules

- Configuration of mechatronics sub-systems

- Investigation of the flow of energy and information

- PLC programming

IMS 1.5: DC transport system

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The conveyor belt system is the element that connects all of the subsystems and thus forms the backbone of the entire production line. In the IMS® production line the conveyor belt systems are self-contained modules, which can be integrated with the sub-systems as needed. Basic processes like "positioning" and "speed" can be demonstrated with just this simple system.

Training objectives for DC transport system

- Principle and function of various sensors

- Making controlled movements on a single axis

- Incremental positioning of a workpiece carrier

- Disabling movement forwards or backwards

- Program for monitoring slip and whether a machine is stopped

- Safe handling of various safety circuits and locks.

Equipment set comprising the following:

Pos.	Product name	Bestell-Nr.	Anz.
1	**Cyber-physical Conveyor System**	LM9515	1
2	**IMS displacement measurement module**	LM9677	1
3	**Workpiece transport pallet**	LM9520	1

Accessories:

Pos.	Product name	Bestell-Nr.	Anz.
4	**DC power supply 24V/5A for IMS conveyor belts**	LM9672	1

Pos.	Product name	Bestell-Nr.	Anz.
5	**USB 2.0 Ethernet adapter, 10/100**	LM8257	1

Media:

Pos.	Product name	Bestell-Nr.	Anz.
6	**Interactive Lab Assistant: IMS 1.5 Conveyor Belt with PLC and Processing Stations**	SO2805-5N	1
7	**QuickChart IMS 1.5 Cyber-physical conveyor belt system**	SO6200-2P	1

Additionally recommended

In areas where there are high levels of humidity the membrane dryer

with water trap should be used to avoid condensation:

Pos.	Product name	Bestell-Nr.	Anz.
8	**Compressor, low-noise**	SE2902-9L	1
9	**Tubing and accessory set for mechatronics systems**	LM9670	1
10	**Set of Allen keys**	LM9716	1
11	**SybaPro mobile IMS experiment trolley with experiment frame, 1200mm, 2 levels**	ST7200-3T	1
12	**Monitor holder for flat screen monitor of weight up to 10kg, DIN A4, VESA 75/100**	ST8010-4K	1
13	**Protective cover for 1200mm wide IMS experiment trolleys with training panel**	ST8010-8L	1

14	**IDG3 membrane dryer with rapid coupling and filter AF20 with water trap**	LM9671	1

Optional Accessories:

Pos.	Product name	Bestell-Nr.	Anz.
15	**Touch Panel KTP700 Basic Trainer Package**	CO3713-4Q	1

IMS/IPA Tester and Fault Simulator

Pos.	Product name	Bestell-Nr.	Anz.
16	**IMS/IPA test and fault simulator**	CO3713-7V	1
17	**25-pin serial interface cable, Sub-D plug/socket**	LM9061	2
18	**QuickChart IMS test and fault simulator**	SO6200-1Z	1