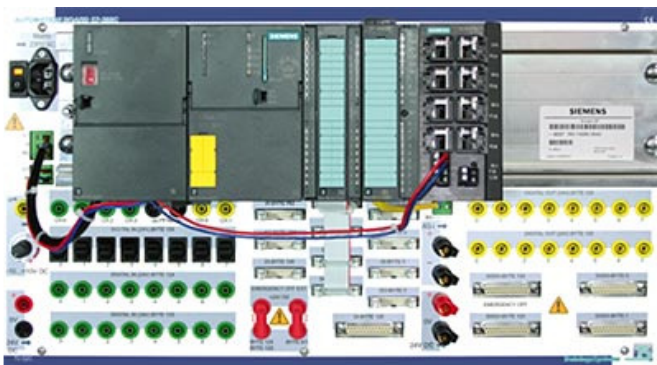
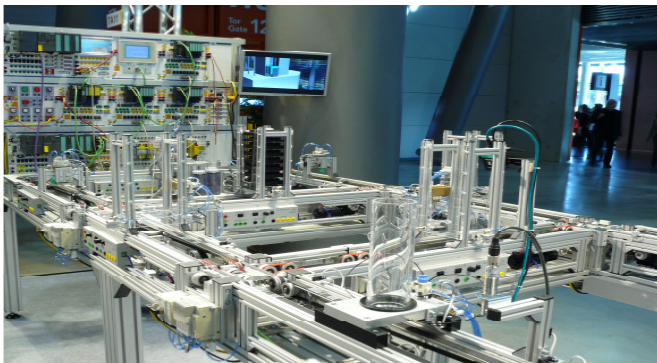


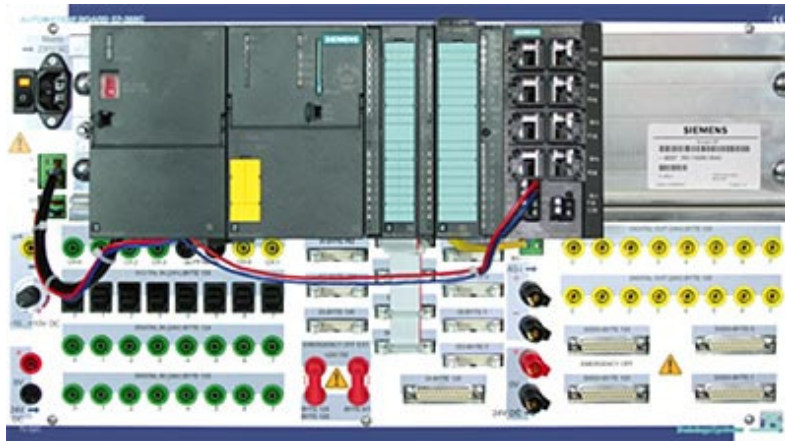


Mechatronics Automation Technology

The ETS Automation Technology training system covers all the areas of industrial automation. Its modular structure allows tailoring the system to the requirements and desires of the customers. One practical application of automation technology can be studied with the ETS Mechatronic System.

The combination of mechanics, automation, drive technology, sensor technology, safety technology etc. in this system provides utmost flexibility in training. Moreover, the system can continuously be adapted to meet the requirements of practice.





70 020 Automation Board S7 / 300
with Siemens PLC S7-300



PLC technology

Customized Siemens S7 /300 PLCs form the main part of our Automation Technology training system. A great variety of components from all areas of automation are included in the training package Automation Technology.

Learning Objectives:

- Setup and configuration of a PLC
- Commissioning of an automation system
- Programming according to international standard IEC1131-3
- Connecting and commissioning of field bus systems

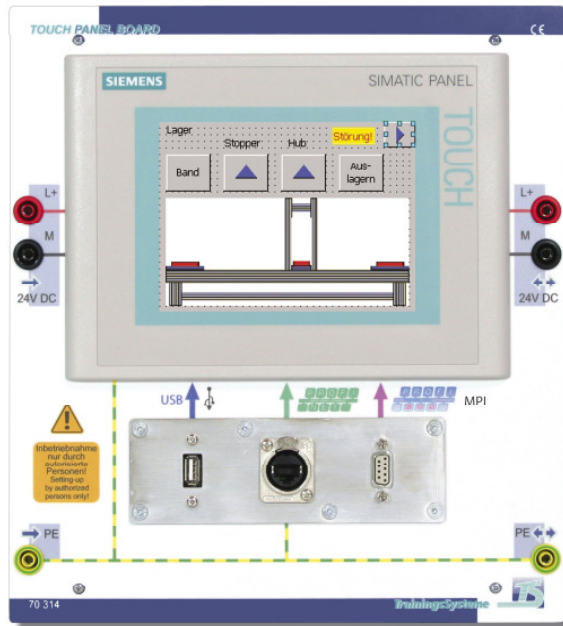


Operator Control and Monitoring Human Machine Interface

Learning Objectives:

- Operating and visualizing processes with "WinCC flexible"
- Creating buttons and in- and output fields for the display of process parameters
- Configuring graphics for labelling buttons or as full-screen background images (selection of images from the PLC)
- Using bar graphs and trend curves for the graphic display of dynamic values





70 314 Touch Panel Board with TP 177B

Operator Control and Monitoring Human Machine Interface



70 316 Operator Panel Board with OP 177B



MPI

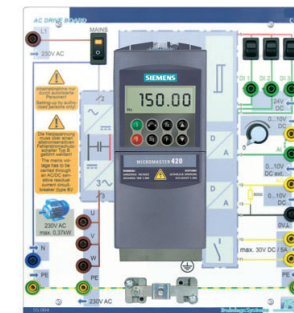
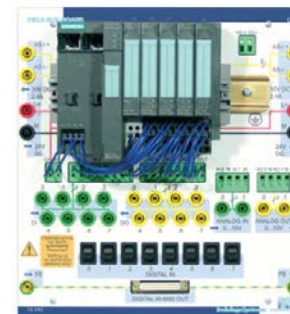
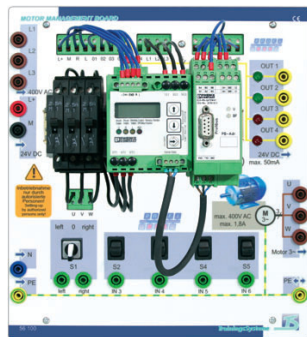
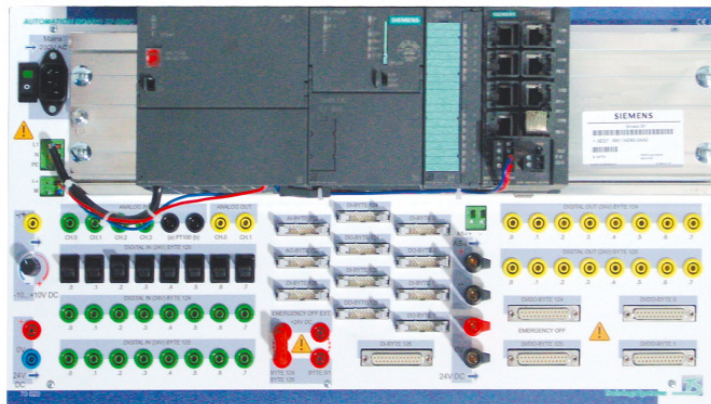


Advanced PLC Training – Field bus systems



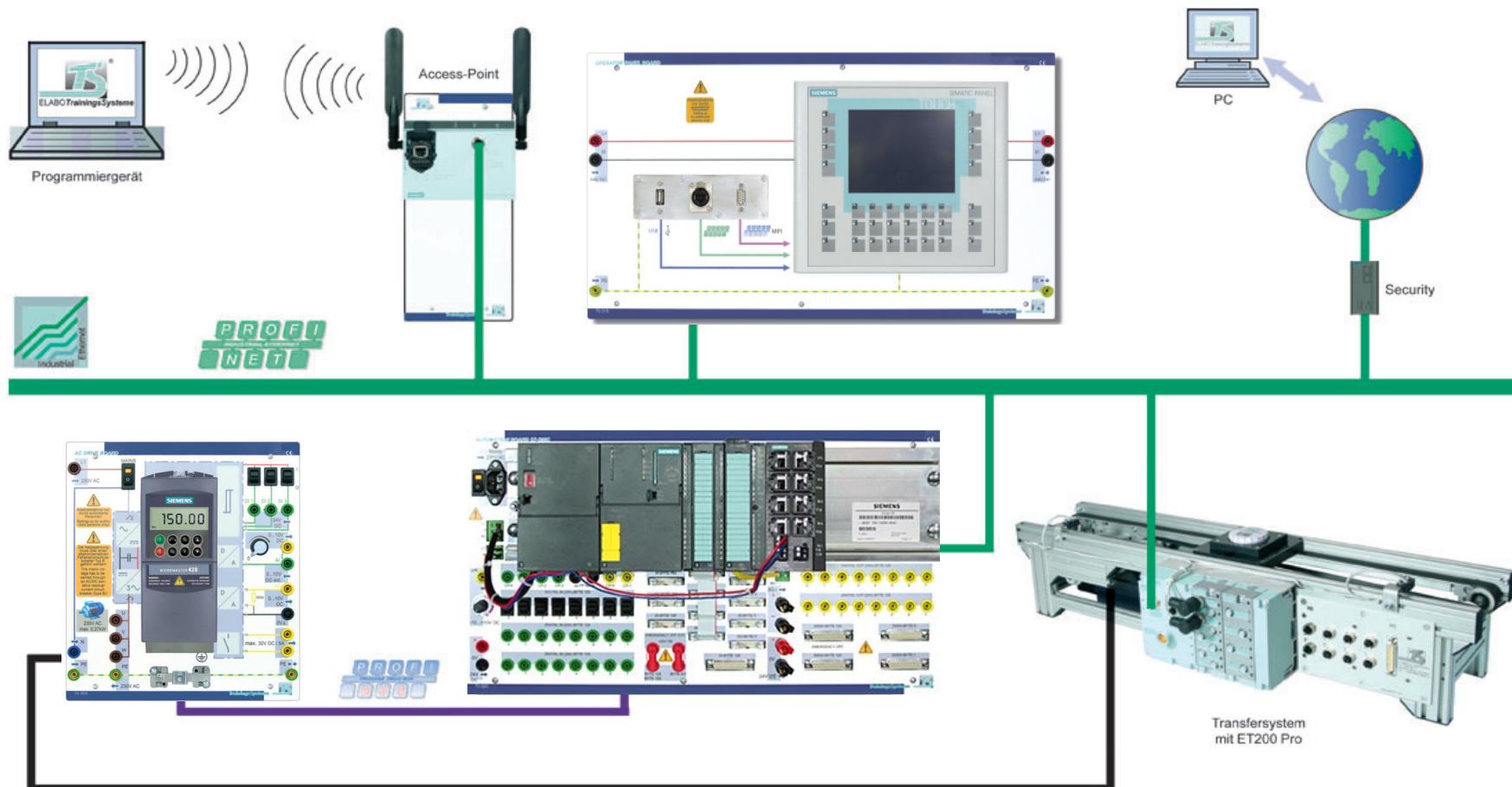
Learning Objectives:

- Bus systems
- information flow in mechatronic systems



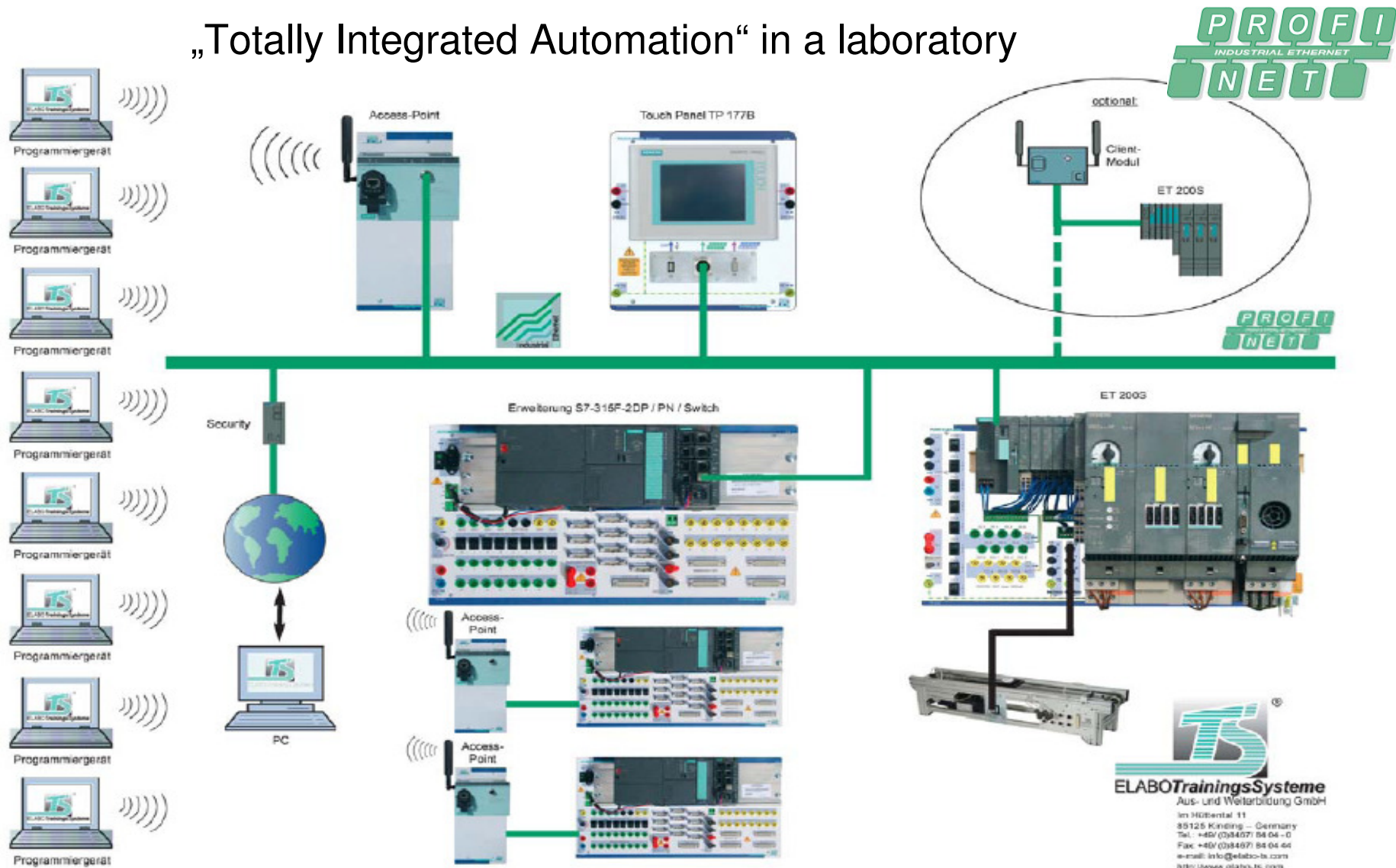


Advanced PLC Training – Field bus systems



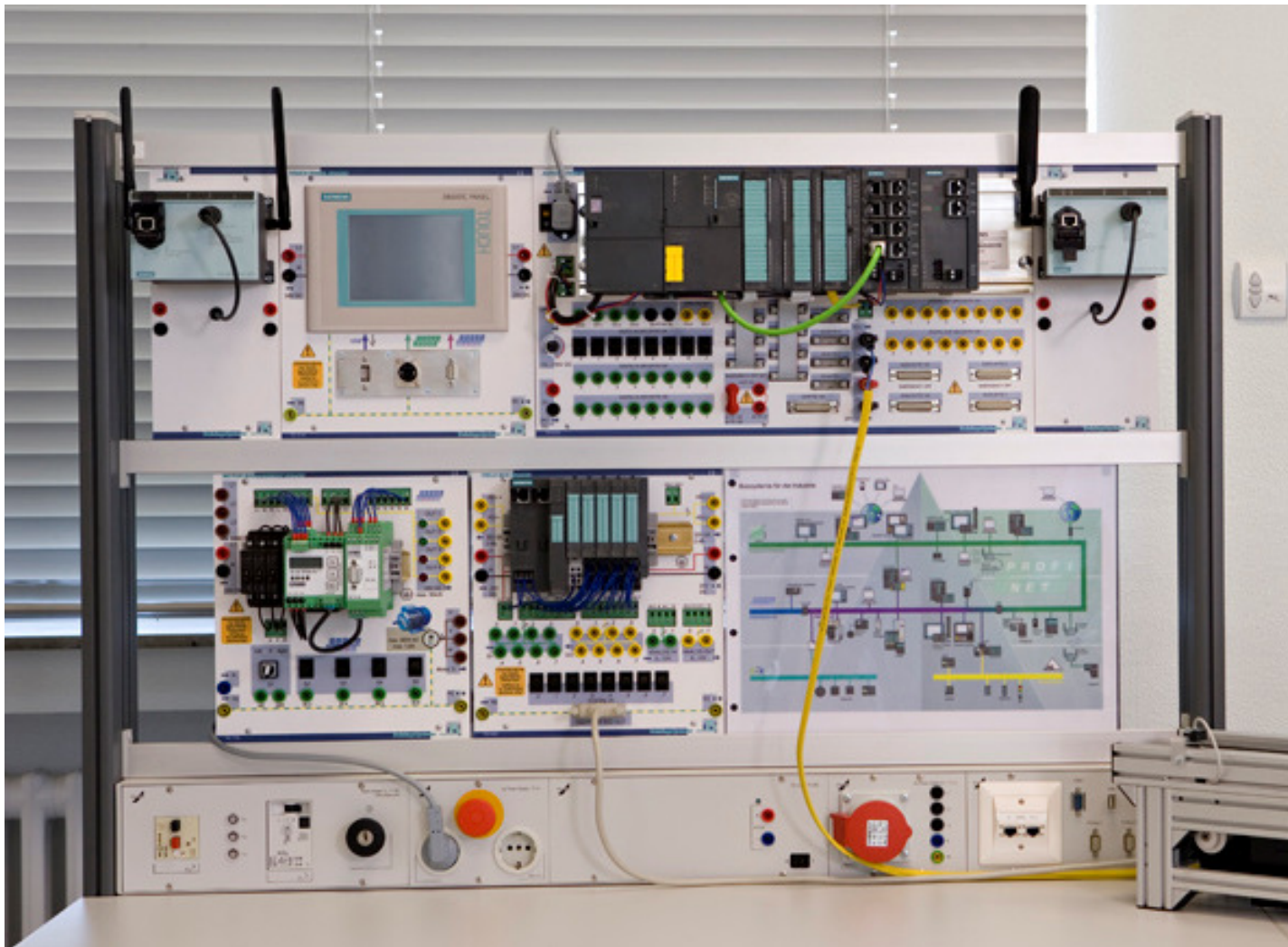


„Totally Integrated Automation“ in a laboratory



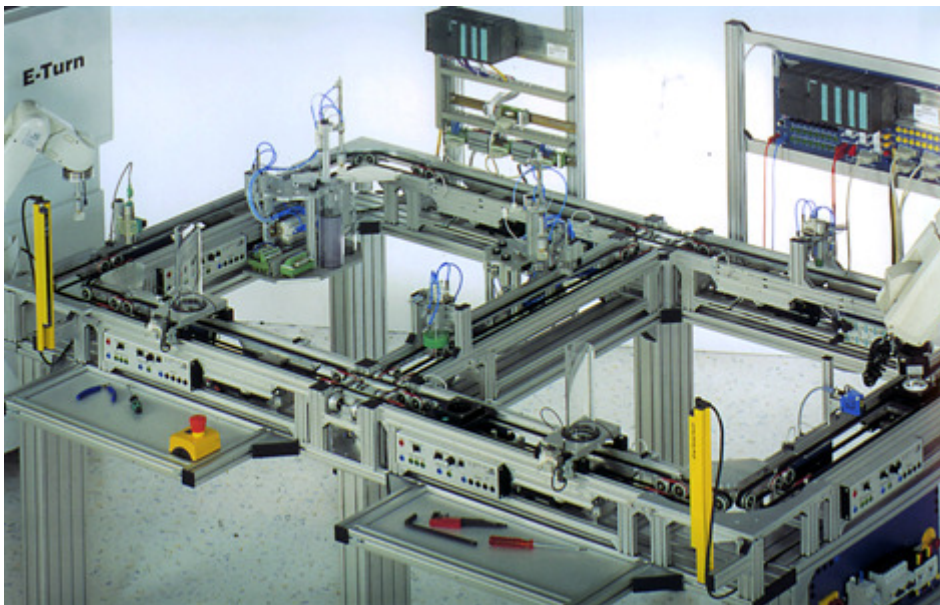


„Totally Integrated Automation“ in a laboratory





The Mechatronic System is a modular and extremely flexible system for training in mechatronics. Due to its modular structure it can be used in all fields of application.



Vital part of the system is a conveyor belt - the transfer system. The transfer system is the link between all the other modules.



Transfer system Interchangeable Drives

Different motor types, which can be exchanged at any time, are available to serve as drive units.



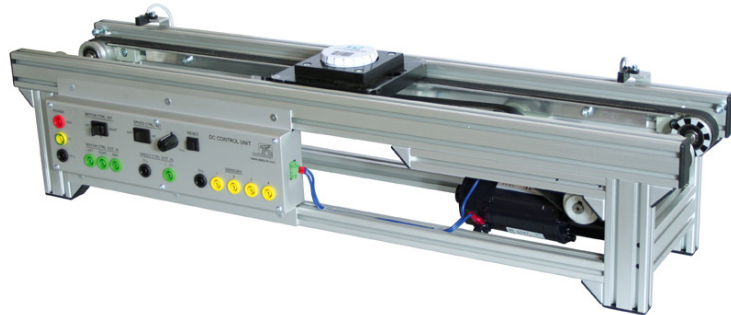
Learning Objectives:

- Selection
- Integration
- Testing
- Commissioning of drive units

80 590 Transfer System with DC motor 24 V DC
80 591 Transfer System with AC motor 3 x 230/400 V
80 831 Transfer System with servo motor 80 830



Transfer system



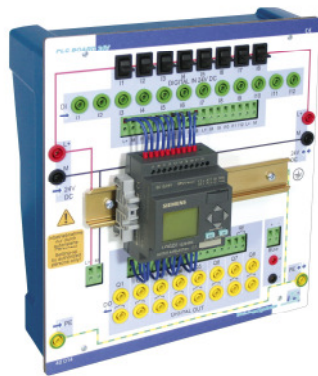
80 590 Transfer System with DC motor 24 V DC and DC control unit

Motor controls for DC drives

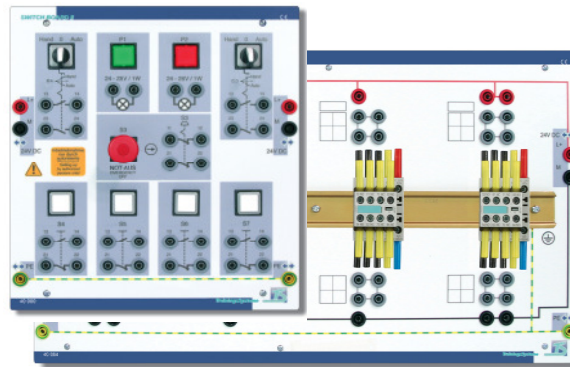
Motor controls for AC drives

Motor controls for servo drives

Depending on the type of the selected motor, different motor control units are available.



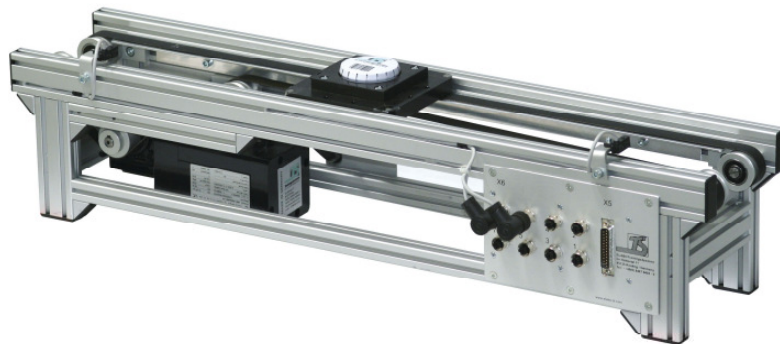
40 016 PLC Board with LOGO!



Hand-operated switches and contactor circuits



70 020 Automation Board S7 / 300 with Siemens PLC S7-300



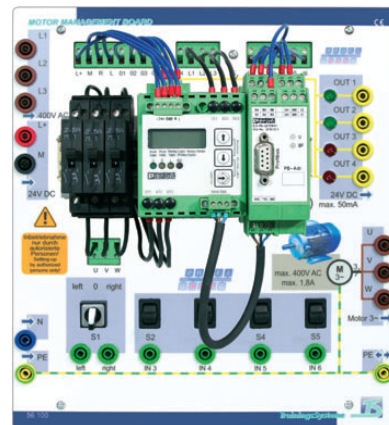
Transfer system

Motor controls for DC drives

Motor controls for AC drives

Motor controls for servo drives

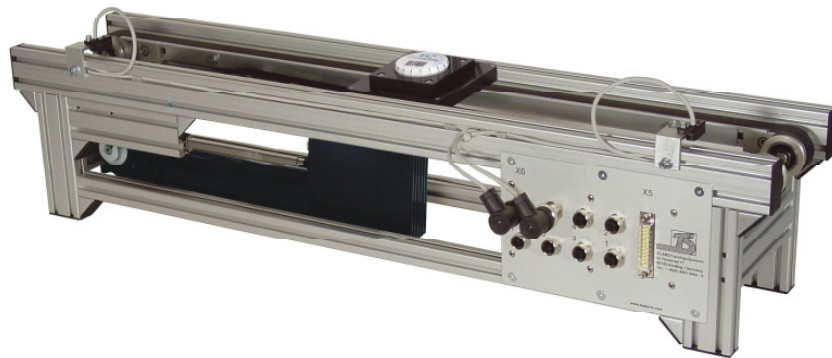
80 591 Transfer System with AC motor 3 x 230/400 V



56 100 Motor Management
Board (electronic load relay)



55 004 AC Drive Board
with frequency converter



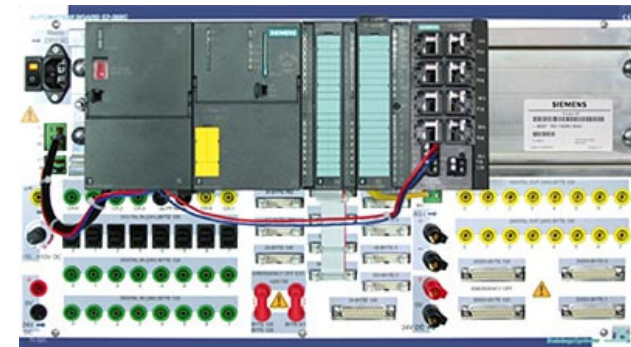
Transfer system

Motor controls for DC drives

Motor controls for AC drives

Motor controls for servo drives

80 591 Transfer System with servo motor



70 020 Automation Board S7 / 300
with Siemens PLC S7-300



80 710 Sensorics Box

Transfer system

Sensorics I

Learning Objectives:

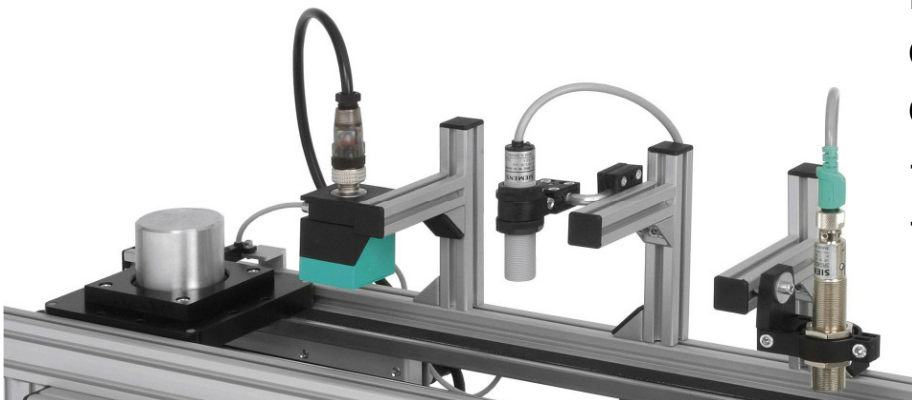
- Types of sensors and how they work
- Testing and adjustment of sensors
- Applications of sensors
- Distance measurement and material detection

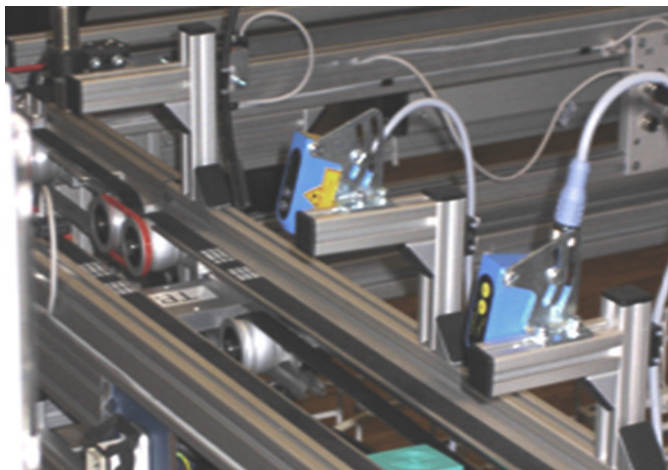
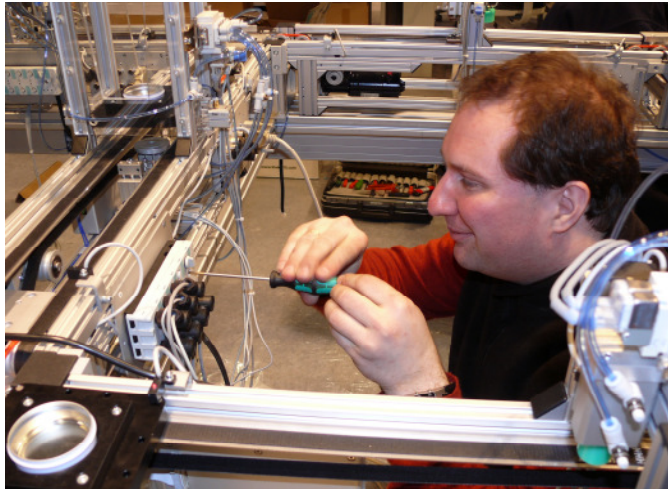
Sensors:

inductive
capacitive

optical:

- diffuse reflective sensor
- retro-reflective sensor

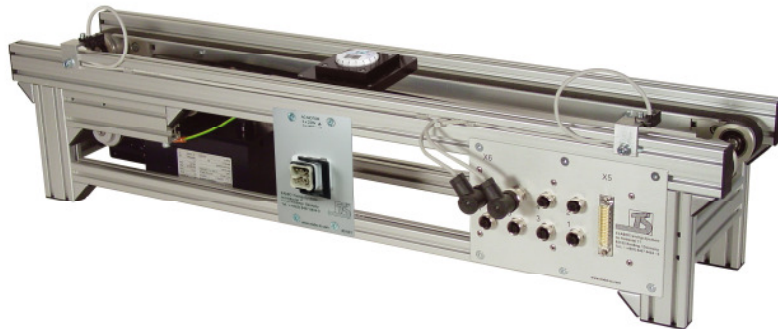




Sensorics II

Learning Objectives:

- Inductive sensors
- Capacitive sensors
- Optical sensors
- Laser reflection light scanner
- Incremental distance measurement
- Ultrasonic sensor
- Inductive identification system



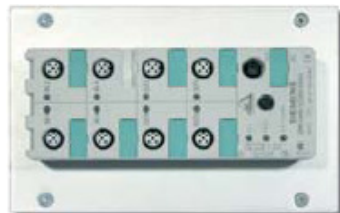
80 590 Transfer System with standard
M 12 interface



AS-i



78 108 AS-i connecting module



PROFIBUS



70 893 PROFIBUS connecting module

Transfer system Interfaces

Learning Objectives:
Bus systems, information flow in
mechatronic systems

PROFIBUS
TCP/IP
PROFINET
Industrial Ethernet
INTERBUS
AS-i

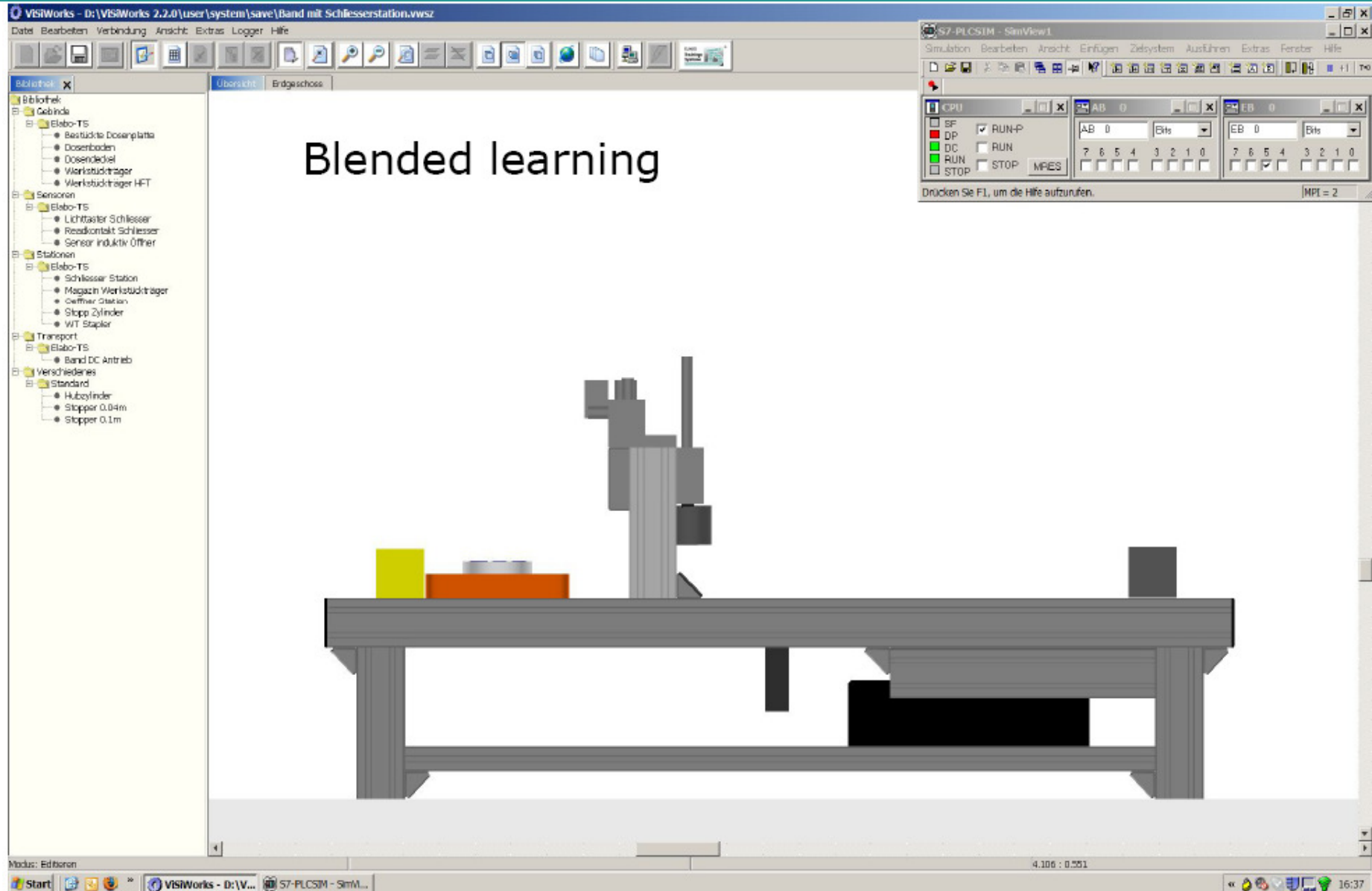


PROFINET





Blended learning



The screenshot displays the VISIWorks 2.2.0 software environment. The main workspace shows a 3D CAD model of a mechanical assembly, including a base, a vertical support, and a horizontal arm with a yellow and orange component. The left-hand pane contains a hierarchical library tree with categories like 'Bibliothek', 'Sensoren', 'Stationen', 'Transport', and 'Verschiedenes'. The right-hand pane shows the 'S7-PLCSIM - SimView1' window, which includes a CPU status section with checkboxes for SF, DP, DC, RUN, and STOP, and a ladder logic diagram with two rungs labeled 'AB 0' and 'EB 0'. The status bar at the bottom indicates 'Modus: Editoren' and '4.106 : 0.551'.



V5SWorks - D:\V5SWorks 2.2.0\user\system\save\Band mit Schliessstation 2.vswsz
 Datei Bearbeiten Verbindung Ansicht Extras Logger Hilfe

Übersicht Endgeschoss

SIMATIC Manager - [ElaboTS Schliess erw -- C:\Programme\Siemens\...]
 Datei Bearbeiten Einfügen Zielssystem Ansicht Extras Fenster Hilfe
 < Kein Filter >

ElaboTS Schliess erw
 SIMATIC 300(1)
 CPU 315F-2 PN/DP
 S7-Programm(1)
 Quellen
 Bausteine

OB1
 FC72
 VAT_1
 FB1
 DB1
 SFC64

Laden: Für 4 von 4 Objekten erfolgreich.

Modus: Simulation

S7-GRAPH - [FB1,DB1 (Kette 1) -- ElaboTS Schliess erw\SIMATIC 300(1)\CPU 315F-2...]
 Datei Bearbeiten Einfügen Zielssystem Ansicht Extras Fenster Hilfe
 40%

S7-GRAPH Ladder Logic Diagram:
 Step 4.1: T#700ms, Cmp >
 Step 4.2: E0.7, 6
 Step 5: S4, Tran U: T#1s289ms, T: T#1s289ms, S5, Step5, R A0.0
 Step 6: E1.5, 6, Tran U: T#727ms, T: T#727ms, S6, Step6, S A1.6
 Step 7: E1.7, 6, Tran U: T#3s152ms, T: T#3s152ms, S7, Step7, R A0.6
 Step 8.1: Cmp >, T#1s, Tran U: T#1s011ms, T: T#1s011ms, S8, Step8, R A1.6
 Step 9: E1.5, 6, Tran U: T#2s632ms, T: T#2s632ms, S9, Step9, S A1.7
 Step 10: E0.7, 6, Tran U: T#729ms, T: T#729ms, S10, Step10, S A0.7
 Step 11: E0.5, 6, Tran U: T#3s117ms, T: T#3s117ms, S11, Step11, R A1.7

Drücken Sie F1, um Hilfe zu erhalten.

0.493 : 17.261

Start S7-PLCSIM - SimV... V5SWorks - D:\V5... SIMATIC Manag... Var - [VAT_1 - @... S7-GRAPH - [FB1,...

16:48



Transporting

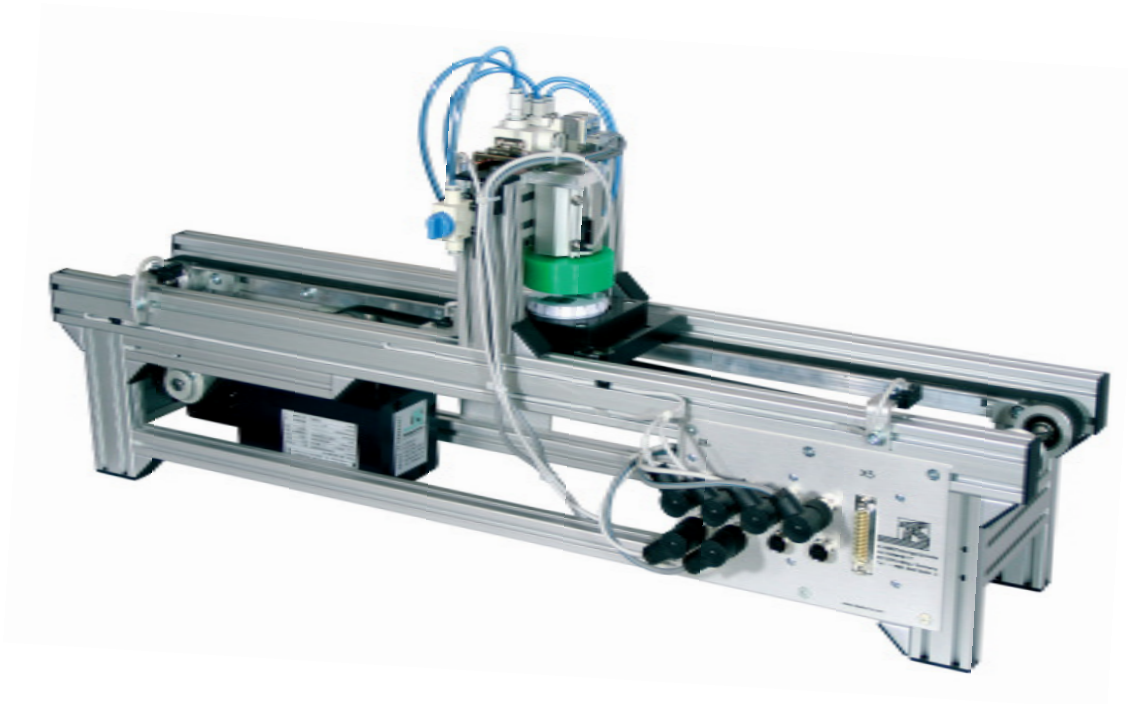


80 590 Transfer System with DC motor 24 V DC
and DC control unit

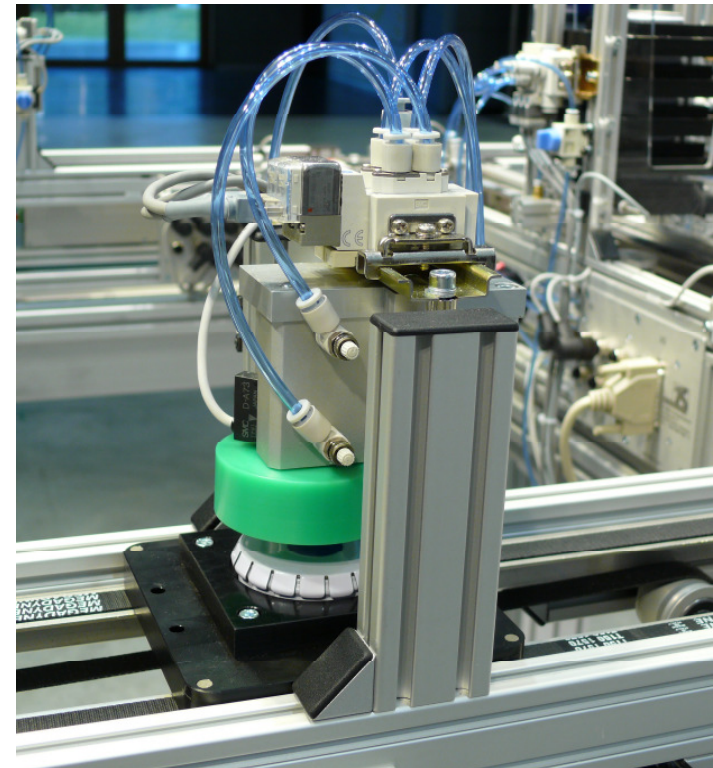


Assembly (Mounting)

Disassembly (Processing)



- 80 630 Pneumatic assembly machine
- 80 640 Pneumatic disassembly machine
- 80 590 Transfer System with DC motor 24 V DC and DC control unit

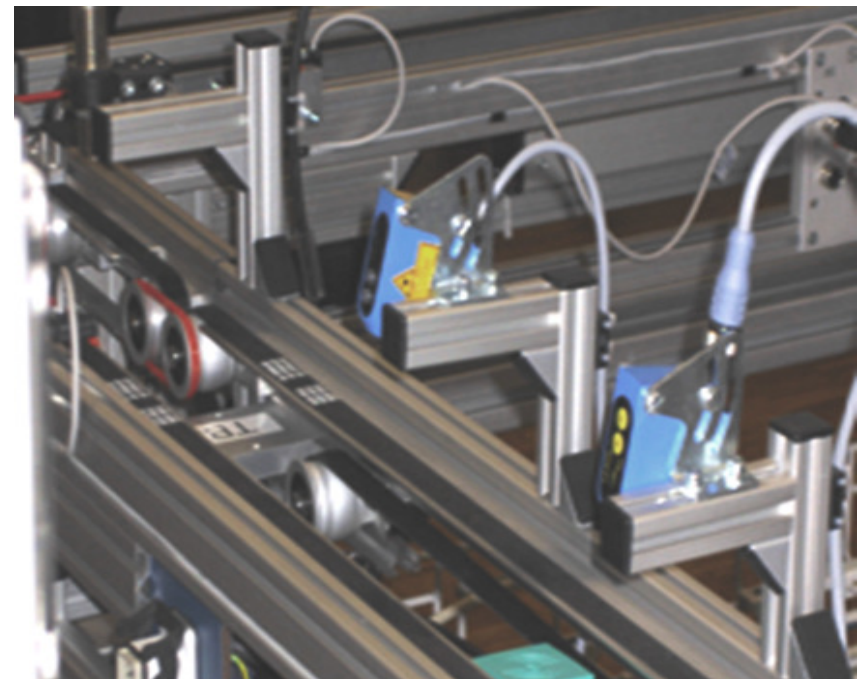
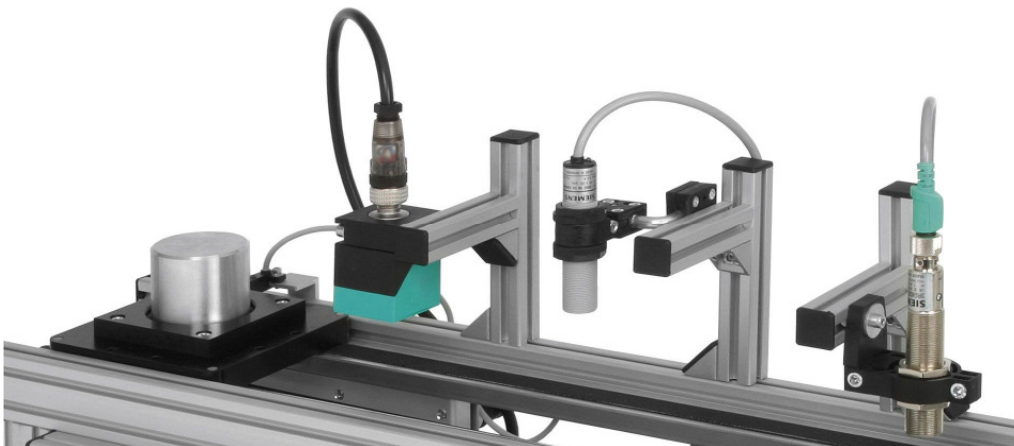




Automatic test station (Sensors)

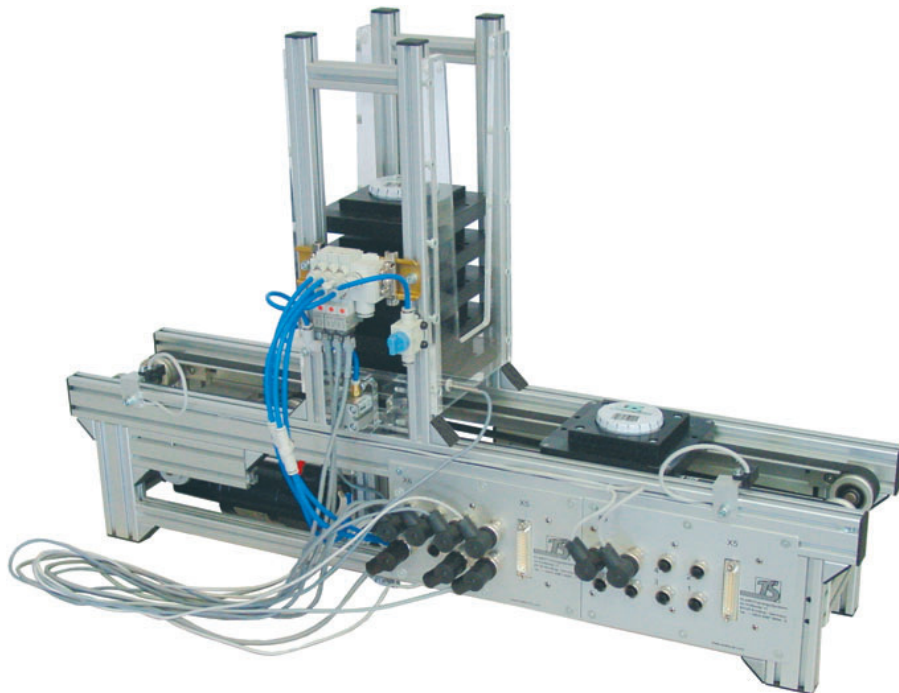
80 680 – 80 689 Test Modules

80 590 Transfer System with DC motor 24 V DC and DC control unit

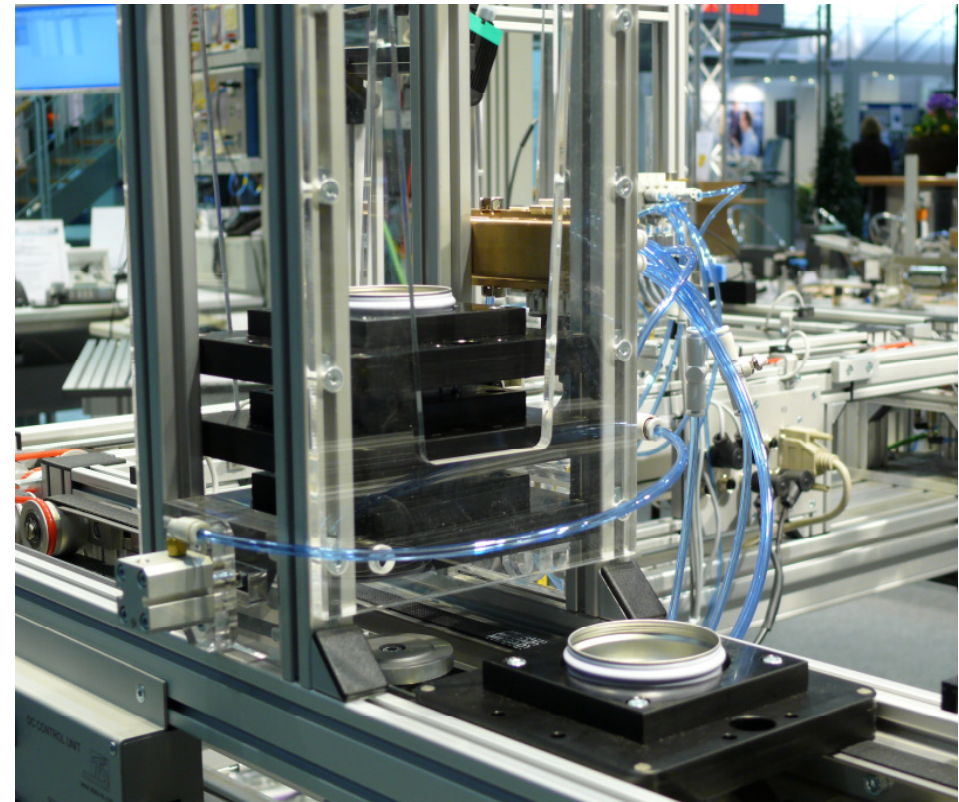




Stores



80 670 Station: Pallet store
80 671 Station: Pallet lift
80 590 Transfer System with DC motor 24 V DC

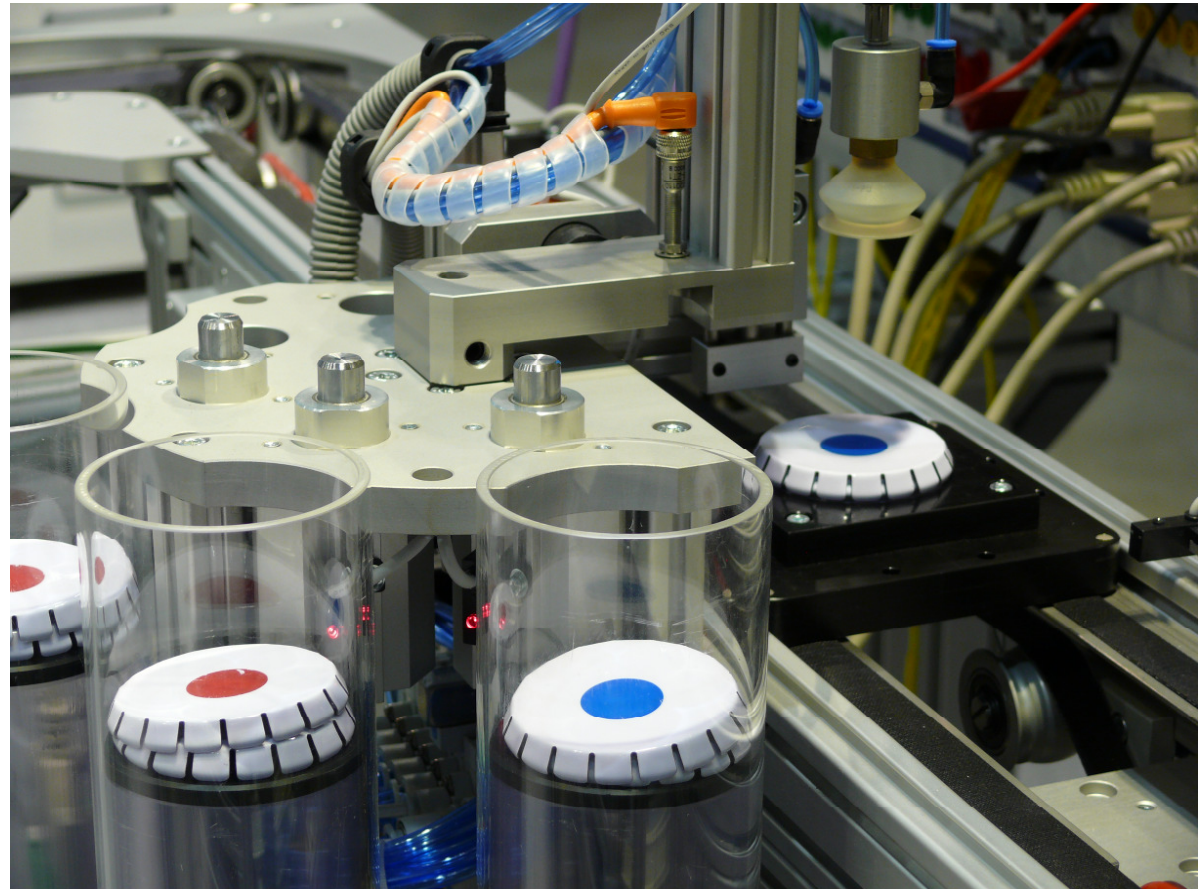




Handling

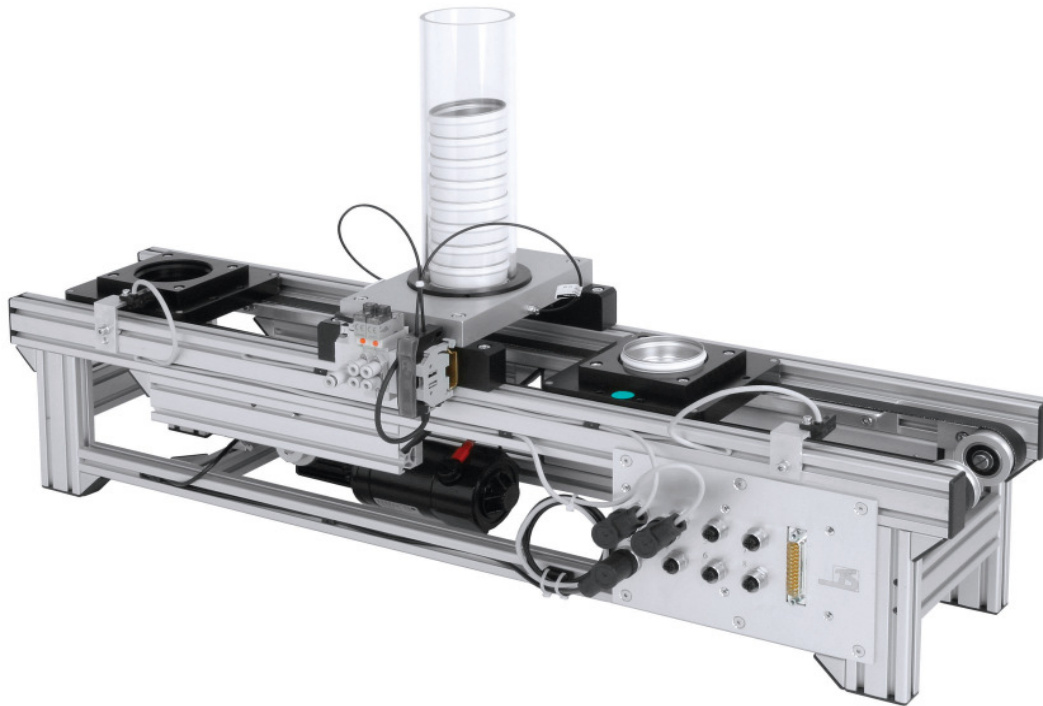


80 670 Station handling
80 621 Set of magazines





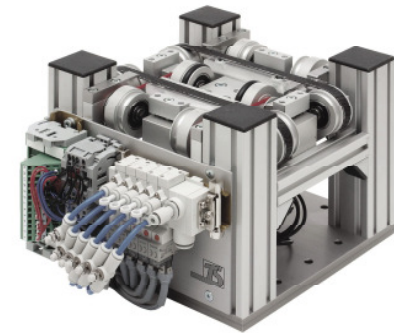
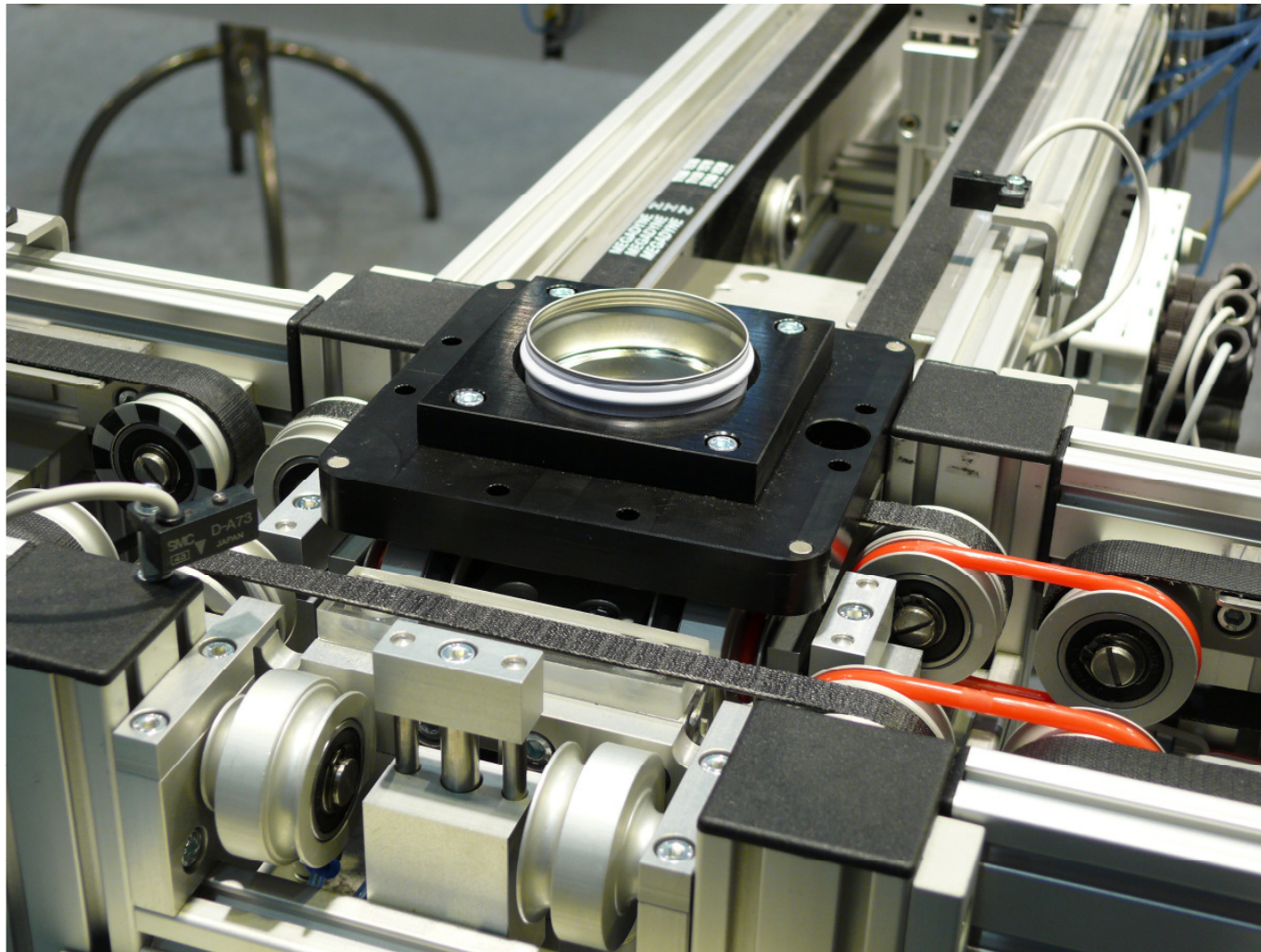
Magazines



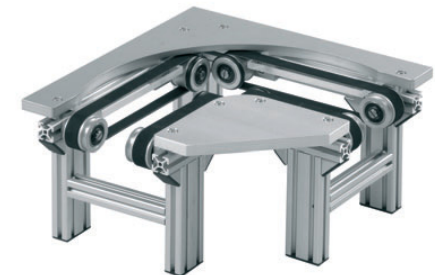
- 80 650 Station: Magazine work piece bottom parts
- 80 651 Station: Singling work piece bottom parts
- 80 652 Magazine for workpiece bottom parts
- 80 590 Transfer System with DC motor 24 V DC







80 598 Crossing

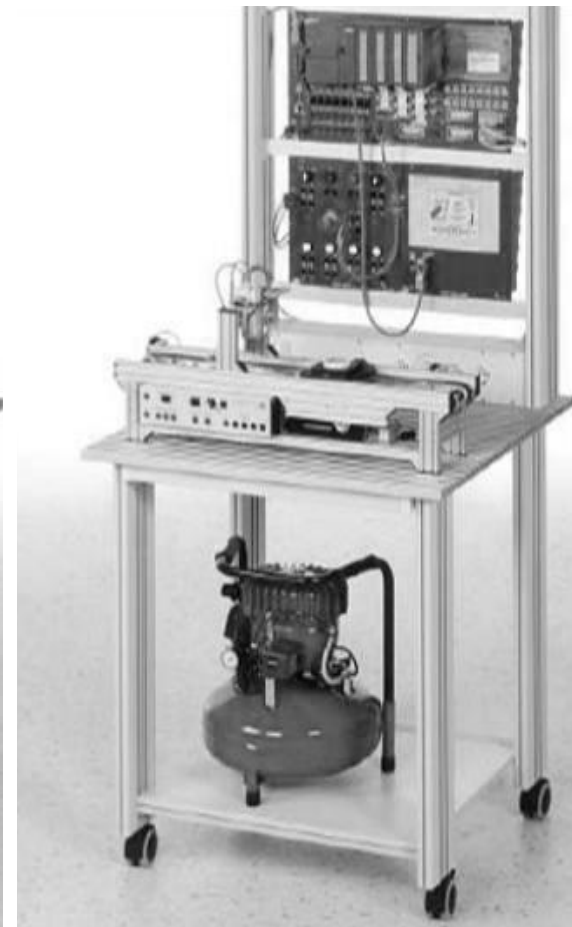


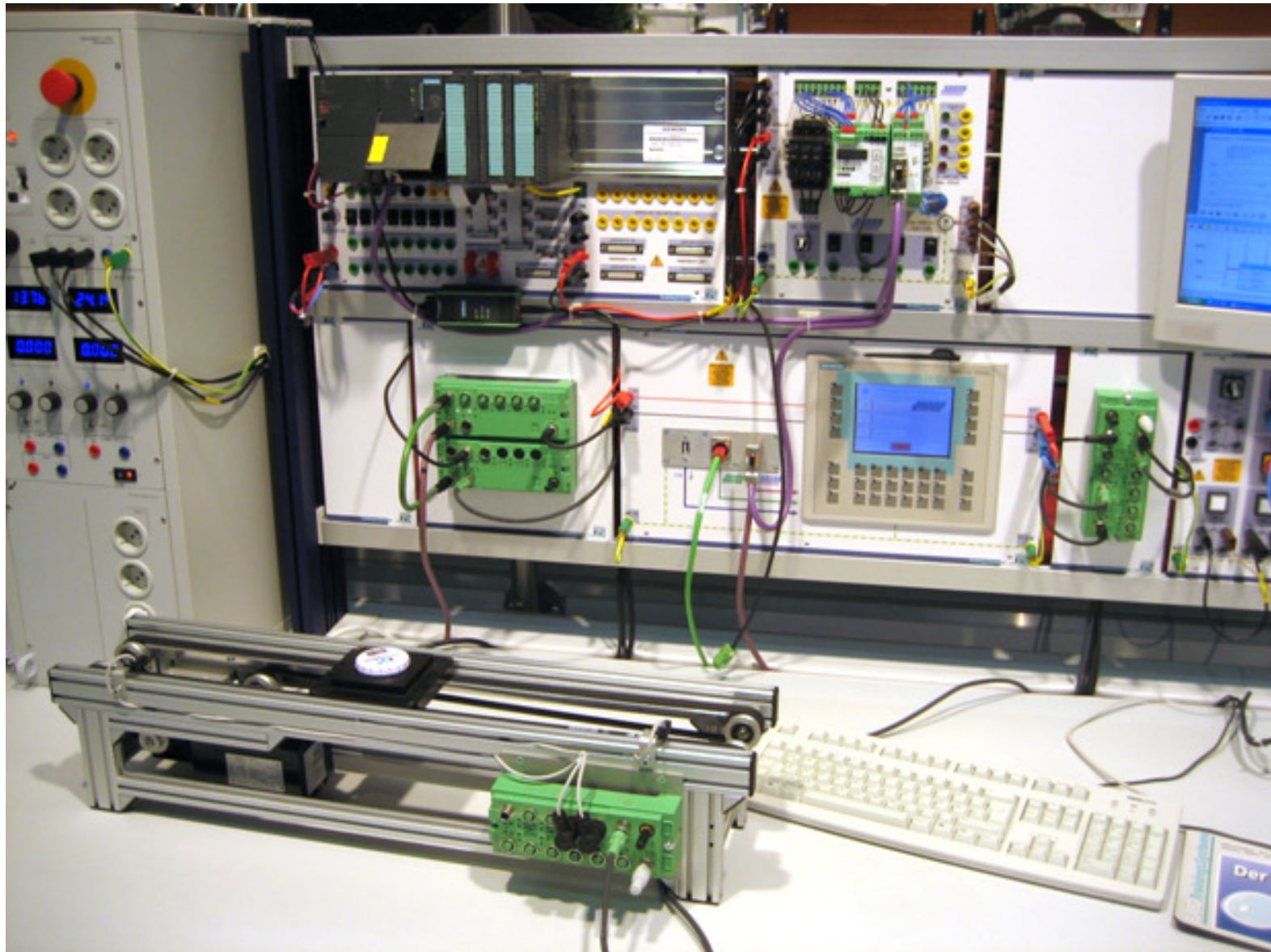
80 597 Curve



Accessories, movable bases and frames

- 89 100 Project and test wagon
- 89 110 H-profile frame
- 89 115 Power distribution duct
- 80 999 Laboratory compressor
- 89 101 Underbench cabinet for project and test wagon



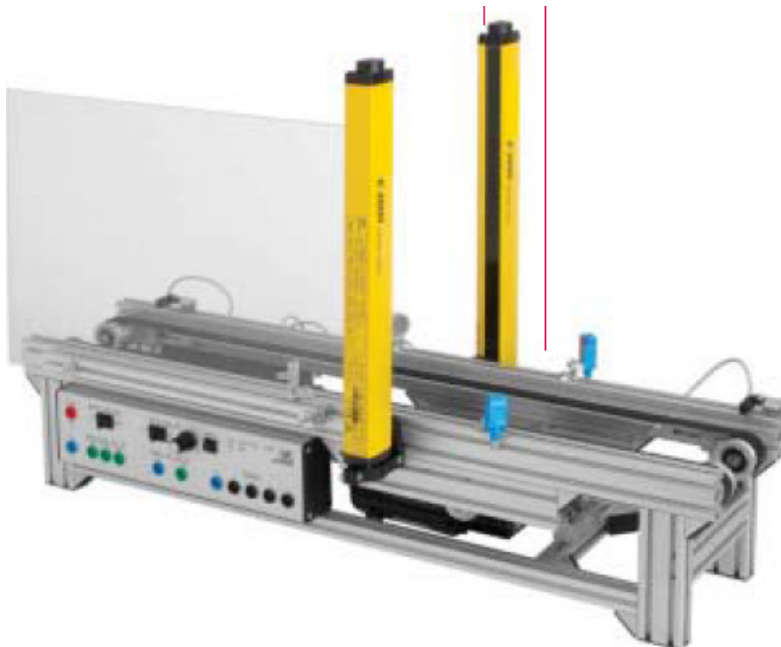




Safety technology

Learning Objectives:

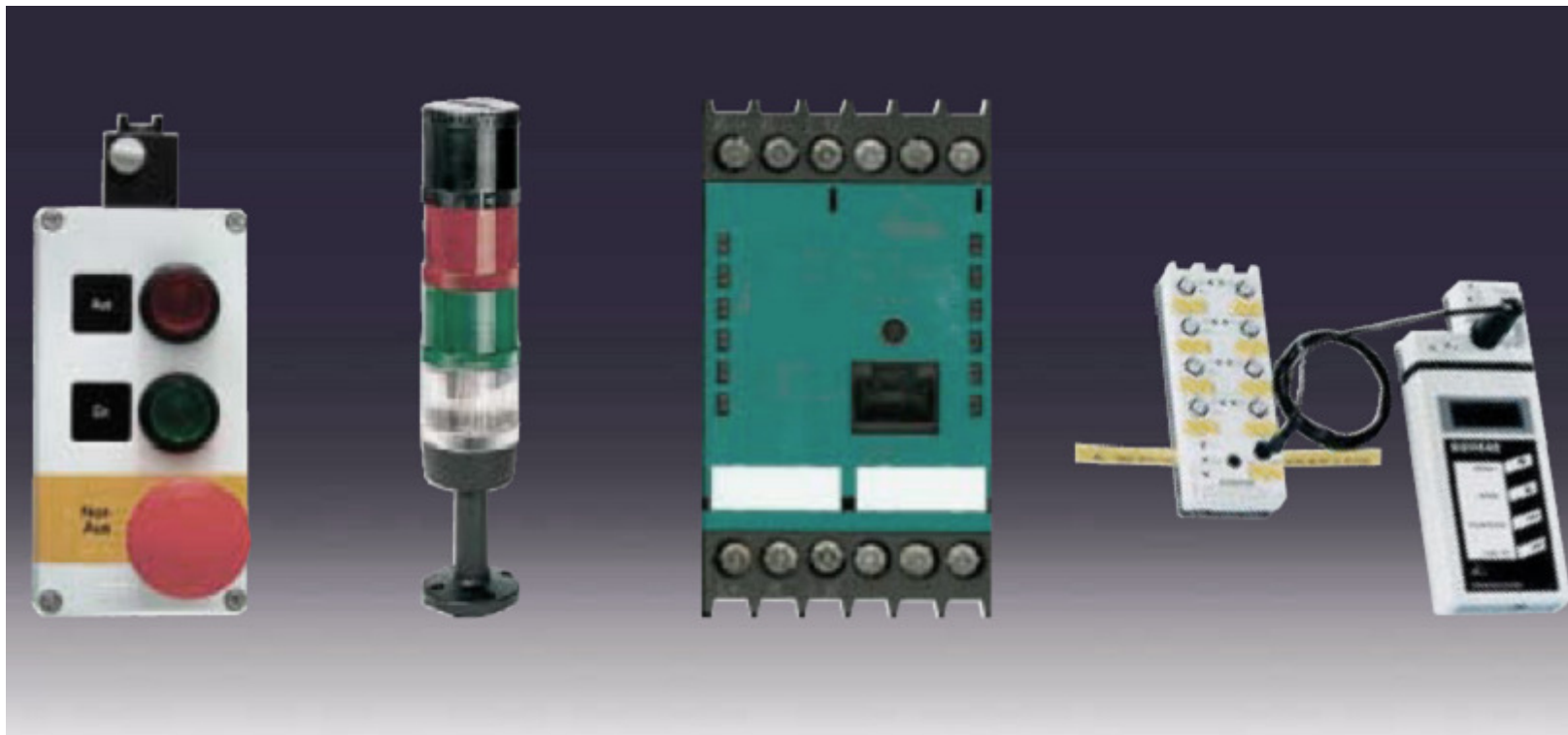
- Safety technology with contactors
- Safety technology with safety relays
- Safety door monitoring
- Emergency-OFF monitoring
- Two-hand operation
- Safe time function
- Safety technology with optical systems
- Light curtain
- Muting
- 3D-Scanner
- Fail-safe PLC
- Fail-safe AS-i bus
- PROFIBUS or PROFINET with PROFIsafe



40 060 Light curtain



Safety technology Fail-safe AS-i bus



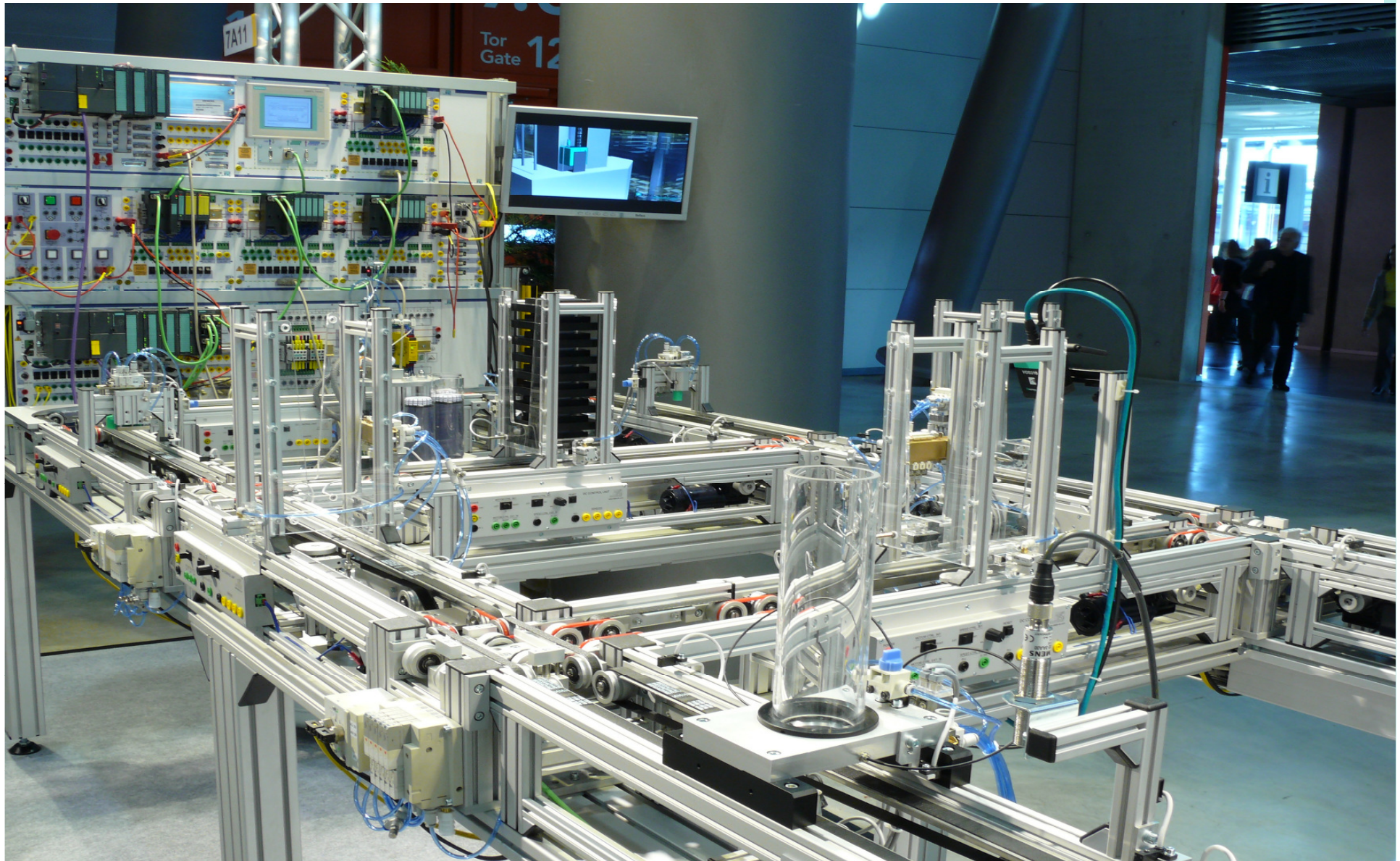
40076
Fail-safe AS-i
EMERGENCY STOP

78139
AS-i signal
column

40072
AS-i safety monitor

40078
Fail-safe
AS-i slave

78140
adress tool





Manufacturing Execution System (MES)





International Cooperation Network of

DIstance **L**earning **A**nd **R**emote **C**ontrol





Information and advice

We offer

- ▶ Help in choosing equipment to suit your training needs
- ▶ Comprehensive system determination
- ▶ Service-Center – we will call you back and support you in planning and project development
- ▶ Classroom layout
- ▶ Ergonomic workplace design
- ▶ Make offer together with you
- ▶ Information about our products / manuals



Project support from the start ...



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