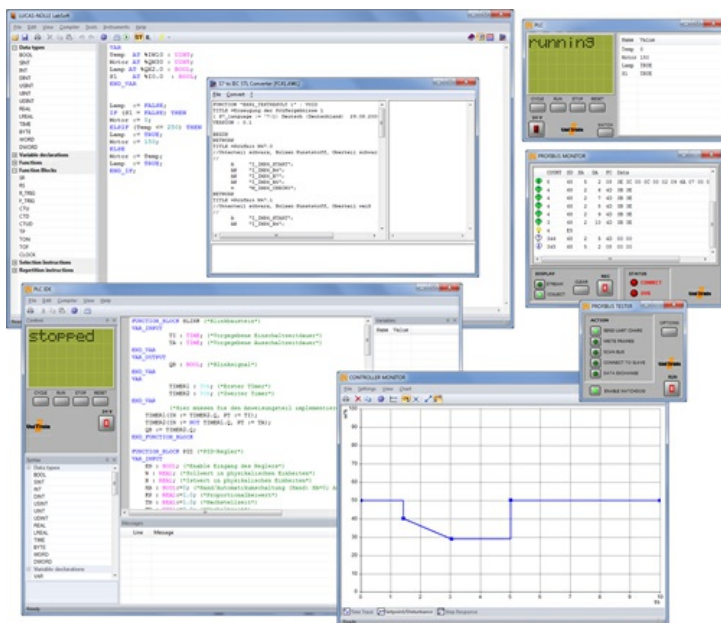# Table of Contents

UniTrain®

UniTrain is a multimedia e-learning system with integrated, mobile electronics lab for general education and advanced training in electrical engineering and electronics.

# UniTrain courses

UniTrain courses

UniTrain industrial process automation courses

UniTrain industrial process automation courses

From closed-loop control of individual systems to flexible automation of entire processes, the various courses convey the fundamental, the principles and the properties of components used in automated processing and production plant with the aid of animations and numerous experiments involving authentic equipment. Multiple experiments cover investigation of controlled systems, determination of step responses and optimisation of control loops. Training also covers the use of useful aids such as Bode and Nyquist plots in authentic experiments.

IPA 4 corking station
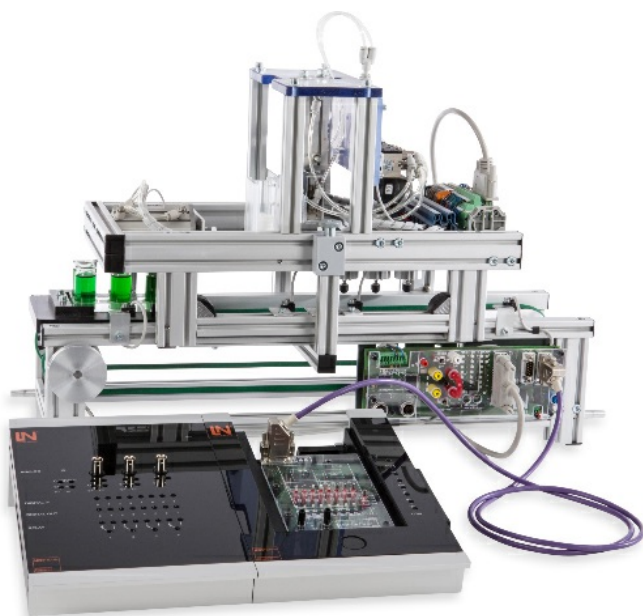
IPA 4 corking station

Enabling a water-tight sealing of bottle groups, this station is the optimum solution for typical production processes in the most varied of industries. The system's modularity permits various configurations to be implemented in a safe laboratory environment.

Training content:

- Setup, wiring and start-up of a process plant

- Selection, application and connection of various sensors

- Use and connection of measurement transducers

- Design of open-loop and closed-loop control programs

- Process handling and monitoring

- Inspection, maintenance and repair

- Networking of process plants

List of articles:

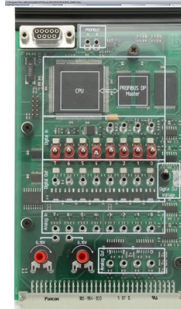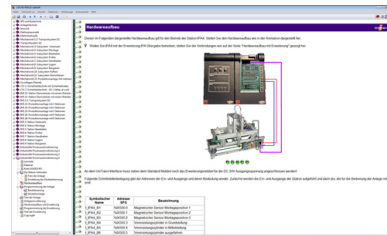| Pos.	Product name	Bestell-Nr.	Anz.
1	**Course - Process technology: IPA 4 Corking station**	SO4204-3H	1

Delivery includes:

Experiment board with:

- PLC-card
- IMS system connection card
- CD-ROM with Labsoft browser and course software

Training content:

- Course duration: approx. 4.5 h

2 **IPA corking station** LM9553 1

Bottle corking:
The IPA corking station is mounted on a conveyor belt and allows a water-tight corking of bottles by means of plastic caps. Six bottles filled with coloured liquid and placed on a carrier are positioned below the filling station. The bottles are then sealed by means of a pressing cylinder. Once all bottles have been corked, the carrier is transported to the next station.
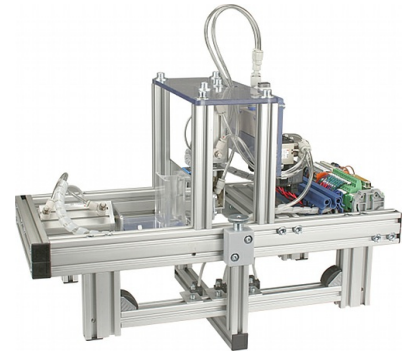
The corking station consists of:

- 1 magazine for bottle caps

- 1 pressing cylinder

- 1 separating cylinder

- 3 stop cylinders

Sensors:

- Capacitive sensor for filling-level monitoring

- Micro-switch for filling-level monitoring

- Magnetic limit sensors

- Optical sensors

Actuators:

- Stop-cylinder, dual action

- Pressing cylinder, twist-proof with dual action

- Separating cylinder, twist-proof with dual action

- 3/2-way solenoid valve

- 4/2-way solenoid valve

- Exhaust-air throttle valves

Electrical system:

- IMS connection DSUB 25

Your benefits:

- Hands-on practice thanks to a use of industrial components

- Can be combined with any open-loop or closed-loop system from industry and education

- Can be expanded using additional IPA stations:
  Compact station, mixing, filling and uncorking

- Can be integrated into IMS® (Industrial Mechatronic System)

- Demonstration of process flows

- Modular design for quick and easy assembly

- Immediate application, thanks to hardly any need for wiring

3 Double conveyor belt segment, 24V motor

LM9606   1

Basic mechatronics module driven by a variable speed 24-V geared motor and complete with end-limit sensors and integrated PROFIBUS DP slave. Designed for basic experiments on a conveyor system or for incorporation into a complex mechatronics system for controlling the flow of materials. The conveyor belt conveys work pieces on carriers and can be used to link individual sub-systems. It is designed for connection to a PLC control system. It can be combined with other conveyor belts, 'curve' units or transfer junctions. IMS stations can be connected directly to the belt and jointly controlled via PROFIBUS.

- Length = 600 mm/23,6", width = 160 mm/6,3", belt width = 120 mm/4,7"

- Geared motor, 24 V DC

- Pulse width modulation system for controlling belt at various speeds

- Continuous speed adjustment via potentiometer or analogue input, 0-10 V

- Manual switches for movement to left or right

- 2 inductive end-limit sensors

- 2 x M12 interfaces for additional actuators/sensors

- Sockets for emergency shut-off circuit (disconnection of all voltage to output modules)

- External power supply via 4-mm safety sockets or co-axial power connector

- 9-pin SUB-D connector for contactors, LOGO! or PLC

- Incremental encoder disc for detecting position and speed via optical sensors

- Visualisation as interactive 3D model in IMS-virtual database

- Control requirements: 4 x digital inputs, 3 x digital outputs

PROFIBUS DP slave module:

- Address range: 16 digital input/outputs

- PROFIBUS DP connector: 9-pin DSUB socket

- Rotary switch for setting address

- Transmission rates of up to 6 Mbits/s

- GSD file for use with control software (e.g.: STEP7)

- 25-pin DSUB socket for connecting IMS station

- Output current: 500 mA (total current: 1 A)

- Variable speed control of conveyor belt via PROFIBUS

| 4 | **Workpiece transport pallet** | LM9620 | 1 |

Pallets for carrying and transporting workpieces on conveyor belts. The pallet has a 4-bit identification code.

- Length = 180mm/7,1", width = 119mm/4,7", height = 15mm/0,6"

- Position sensor

- 4-bit identification code

| 5 | **Sixpack for IPA** | LM9560 | 1 |

"Six-pack" crate made of polished transparent acrylic to accommodate up to six bottles.
The six-pack is suitable for use with the IMS workpiece carriers

Includes 7 bottles with bottle tops.

Dimensions: 50 x 100 mm²

Additionally required:

Pos.	Product name	Bestell-Nr.	Anz.
6	**25-pin serial interface cable, Sub-D plug/socket**	LM9061	1

25 pin Sub-D connection cable

- Length: 2m

- Connection: 25-pin plug / 25-pin socket

- Pin assignment: 1:1

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.
7	**Compressor, low-noise**	SE2902-9L	1

Extremely quiet compressed air system with compressor motor, thermo switch and automatic pressure switch. Tanks made of special steel with security valve and non-return valve, master pressure gauge, condensation drain, stop valve and maintenance unit

- Motor output: 0.34 kW
- Suction capacity: 50 l/min
- Power consumption at 8 bars: 2.9 A
- Pressure: 8 bars
- Tank capacity: 15 l.
- Noise level: 40 dB(A)/1m
- Operating voltage: 230V AC
- incl. tube and connection set
- Dimensions: 500x410x410 mm (HxWxL)
- Weight: 19 kg

| 8 | **Tubing and accessory set for mechatronics systems** | LM9670 | 1 |

Universal tubing and accessory set with the required components and adapters for connecting a compressor to mechatronic systems.

- 1 x Compressor connector with plug-in sleeve 8 mm
- 1 x Plug adapter 6 mm/8 mm
- 1 x Plug adapter 4 mm/6 mm
- 2 x Angle connectors 4 mm
- 5 x T-connectors 4 mm
- 5 x T-connectors 6 mm
- 5 x T-connectors with 6 mm/4 mm adapters
- 20 m polyurethane tubing, 4mm
- 10 m polyurethane tubing, 6mm
- 10 Stoppers for plug connectors 4 mm
- 1 x 3/2 directional control valve, manual, 5 mm

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

Membrane dryer, a reliable, effective and cost-efficient alternative for compressed air drying.

- Compact and light

- No power supply required

- Built-in noise suppressor reduces noise development from venting air

- Non-heating and vibration-free

Air filter, high-quality filter water trap

- Double-sided internal thread 1/4"

- Semi-automatic drainage

- High-quality 50 Micro filtering

- Supplies clean compressed air

- Replaceable filter element

- Compact design

IMS furniture

IMS furniture

The IMS furniture system is used together with the Industrial Mechatronics System. The mobile trolleys can be used for individual components or sub-systems. In order to build complex, mechatronics systems, the trolleys can be lined up alongside one another and can be supplemented by frames to accommodate training panels. A power console allows the trolley to be equipped with a wide variety of 3 HU modules. The trolleys can be extended by means of various add-ons attachable to the aluminium rails to make up a multi-function PC experiment trolley.

Pos.	Product name	Bestell-Nr.	Anz.
10	**SybaPro mobile IMS experiment trolley, 1200mm**	ST7200-3U	1

These mobile, mechatronics trolleys with aluminium rails that can be lined up alongside one another are specially designed to accommodate mechatronics set-ups with production lines or pallet rotation systems. The trolleys can be cascaded and are equipped with strong table-top connectors for this purpose.

- The mobile experiment stand is delivered in kit form and needs to be assembled by the customer
- Aluminium rail with integrated grooves to accommodate a wide variety of add-on components (e.g. PC shelf, extension panels, C rails)
- 4 swivelling dual casters, including 2 with brakes
- Work top 1200 x 25 x 900mm (WxHxD)
- Board 1200 x 25 x 800mm (WxHxD), e.g. to accommodate compressors or hydraulic equipment
- Boards with compressed multi-layer chipboard conforming to DIN EN 438-1; colour light grey; with slightly textured 0.8 mm coating on both sides (Resopal) conforming to DIN 16926
- Work top frame with impact resistant protective edging made of 3mm thick coloured plastic, colour RAL 7047
- Coating and adhesives are PVC-free
- Power strip with 5-outlet sockets and power switch, lead and earthed plug
- Height of worktop 750 mm