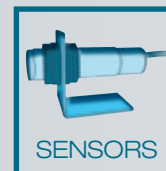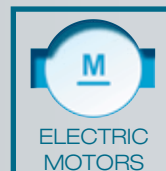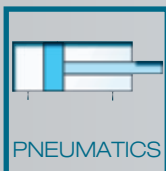# IPC-200
Industrial process control

A complete training system in the field of
Industrial Process Control
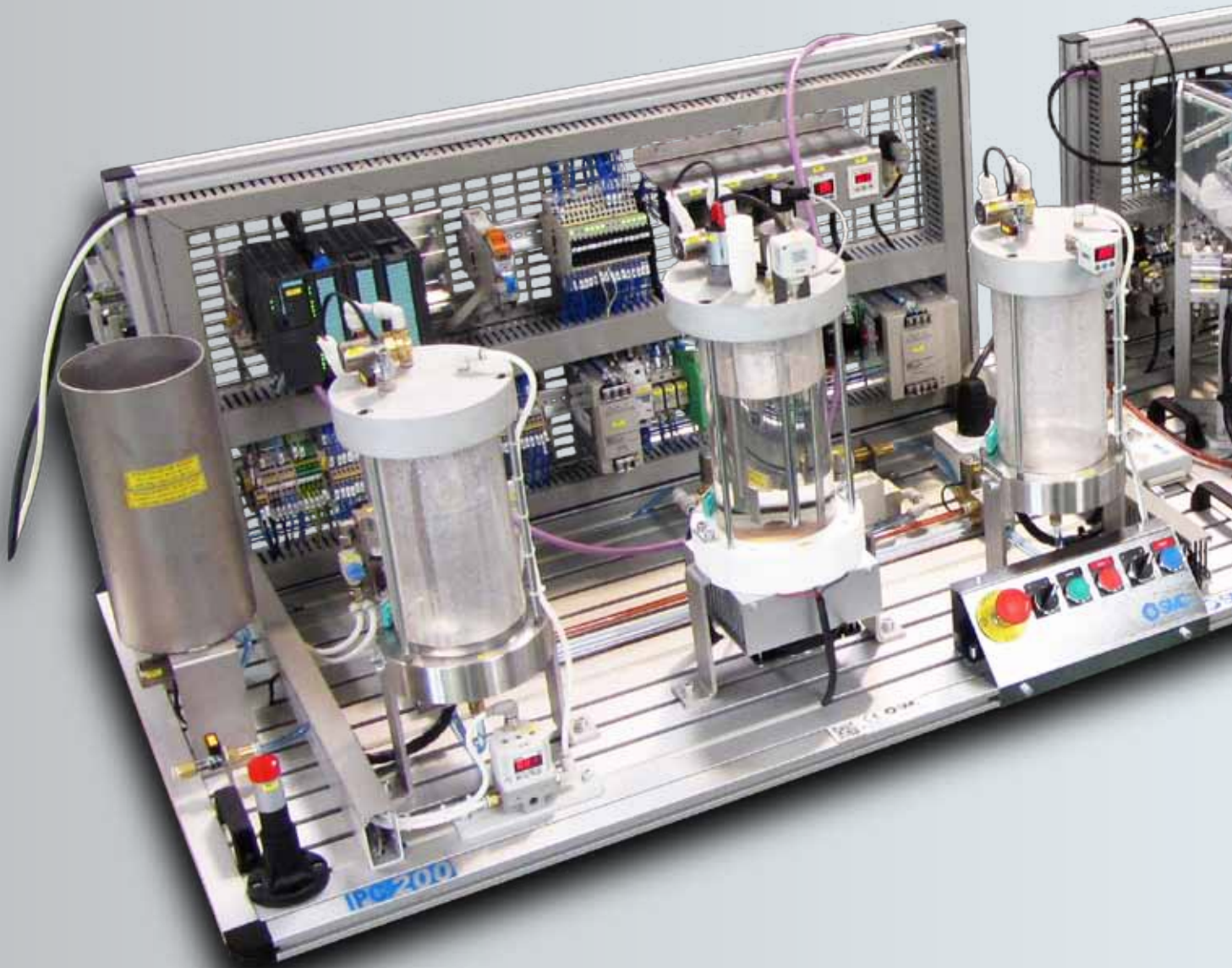
In the following TECHNOLOGIES...

ELECTRICAL PANEL	PNEUMATICS	VACUUM	ELECTRIC MOTORS	SENSORS	CONTINUOUS PROCESSES	PROGRAMM. CONTROLLERS	MANIPULATORS

Develop the SKILLS...

ANALYSIS

TROUBLESHOOTING

DESIGNING

TECH DOCUM.
CREATION

TECH DOCUM.
UNDERSTANDING

OPERATION

PROGRAMMING

SETTING UP
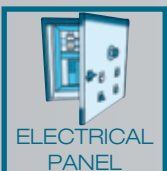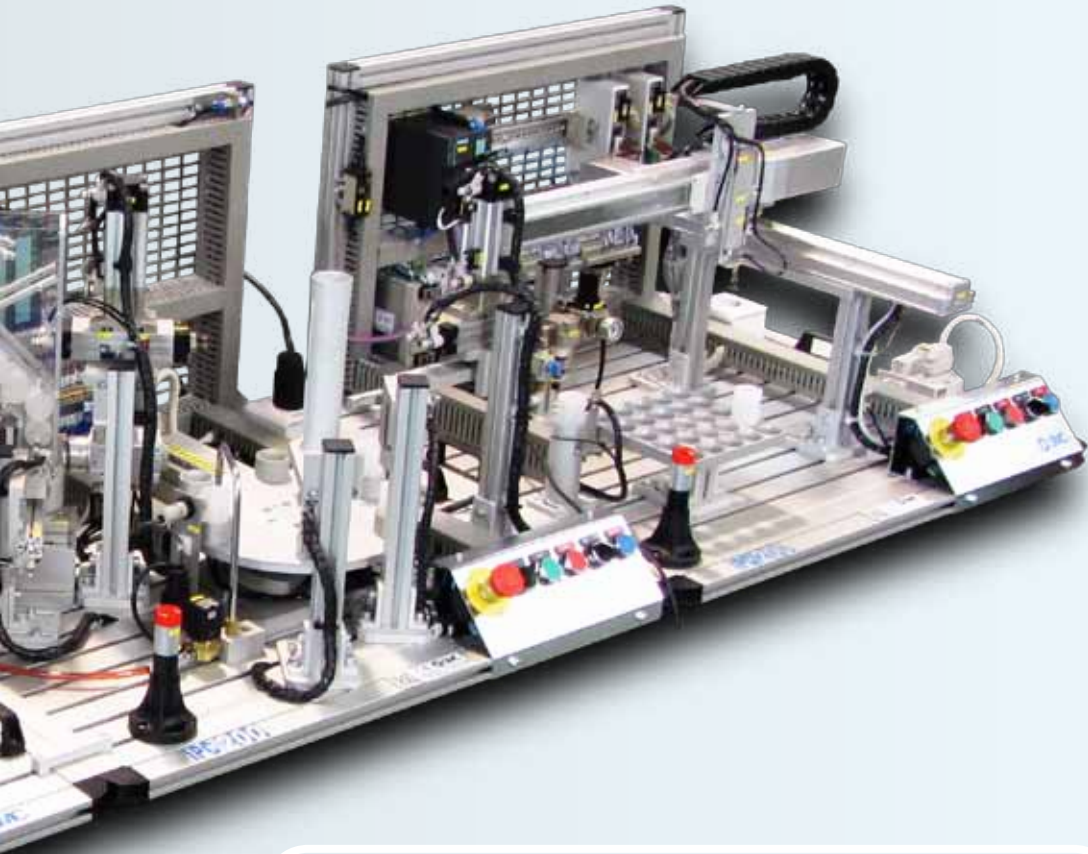
Closed loop control of pressure, flow, temperature and level

Modular and flexible system
built with industrial materials

INDUSTRIAL
COMMUNIC.

MOTION
CONTROL

SCADA /
HMI

AUTOMATED
SYSTEMS
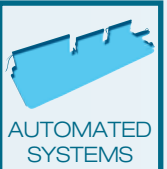
IPC - 200

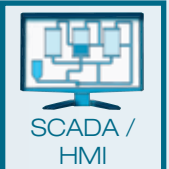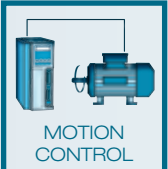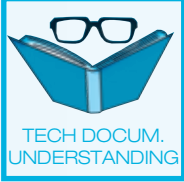# ● IPC-200 - Industrial process control

Fully modular and flexible equipment, comprised of three modules which can work individually or as a complete process line. Various configurations can be created to adapt the IPC-200 equipment to our users different requirements and budgets.

IPC-200 emulates a liquid production and bottling plant and includes the technologies used in continuous process industry, such as pneumatics, electric motors, sensors, continuous processes, programmable controllers, industrial communications, etc.

The training system has been developed by an expert team of engineers and pedagogues to enhance professional skills.

IPC-200 is built entirely from industrial materials so that student works with the same elements found in the working environment.

IPC-200 is composed of three stations each of which carries out one part of the process.

• IPC-201: Production station
The first station simulates the production phase by processing liquid. There are two versions: the first concentrates on digital control elements and the other is directed towards the regulation and control of analogue variables.

🌡 Temperature   Pressure

Level   Flow rate

• IPC-202: Bottling station
The second station reproduces the liquid bottling phase. There are also two versions depending on the type of container feeder.

• IPC-203: Palletizing station
The third station stores the containers in a warehouse with 25 positions.

◉ Common element in all stations

Thermal Trip

Electric connection terminals

Unit for communication bus

Control PLC*

Labels for cables

Power supply

Solenoid valve block

Air treatment unit

Control keypad

User manual and practice manual

Anodised aluminium structure

Three-colour indication light
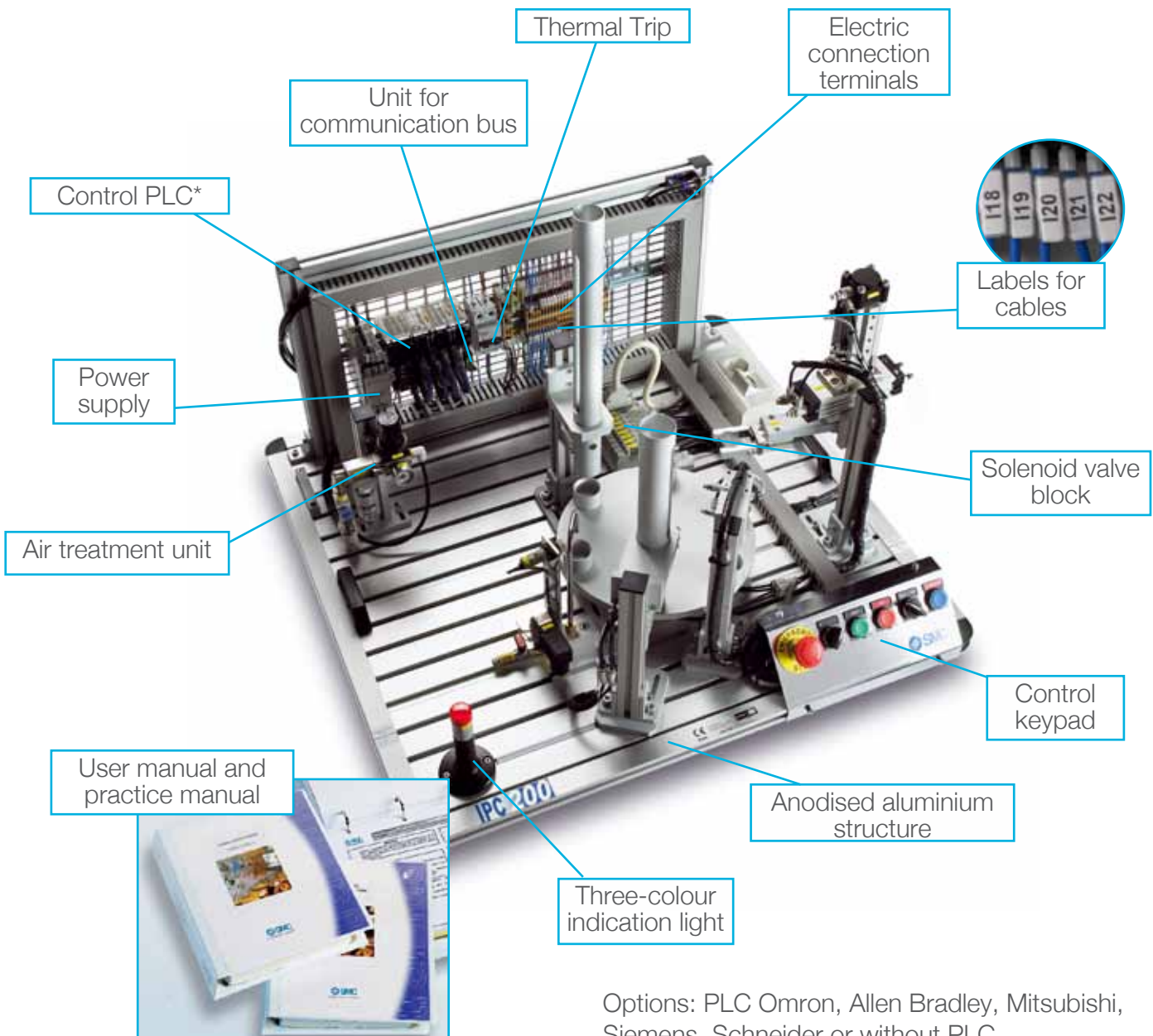
Options: PLC Omron, Allen Bradley, Mitsubishi, Siemens, Schneider or without PLC.

IPC-201 - Production station

This first station represents the production and mixing of the liquid. It has three tanks: two at the side which store the raw material (liquid) and another in the middle where the mixing takes place.

There are two versions of this station: one can control digital and the other analogue variables.

IPC-201 - Production station

• SAI8001	IPC-201 Production station with Omron PLC	
• SAI8051	IPC-201 Production station with Allen-Bradley PLC	
• SAI8061	IPC-201 Production station with Mitsubishi PLC	
• SAI8111	IPC-201 Production station with Siemens PLC	
• SAI8200	IPC-201 Production station with Schneider PLC	
• SAI8041	IPC-201 Production station without PLC	

IPC-201C - Production station for the regulation and control of analogue variables

This version of the production station incorporates a series of elements regulate and control TEMPERATURE, LEVEL, PRESSURE and FLOW RATE.

This equipment is specially designed for the development of professional skills required in continuous process industry (in sectors such as food, pharmaceutical, chemical, petroleum, etc.).

SCADA application included!

Breakdown simulation system

- SAI8005   IPC-201C Production station (analogue variables) with Omron PLC
- SAI8121   IPC-201C Production station (analogue variables) with Allen-Bradley PLC
- SAI8066   IPC-201C Production station (analogue variables) with Mitsubishi PLC
- SAI8020   IPC-201C Production station (analogue variables) with Siemens PLC
- SAI8201   IPC-201C Production station (analogue variables) with Schneider PLC
- SAI8031   IPC-201C Production station (analogue variables) without PLC

ESPECIFICATIONS
DOWNLOAD
www.smctraining.com
TECHNICAL DESCRIPTIONS

IPC - 200

IPC-202 - Bottling station

The second IPC-200 station fills the bottles and feeds and positions lids. The bottles then move on to a third station for storage. All the operations carried out are distributed around a 6 positions index plate.

There are two versions of this station, depending on the bottle feeding module selected: a version with a gravity bottle feeder and another with a more complex feeder with position detection and automatic correction.
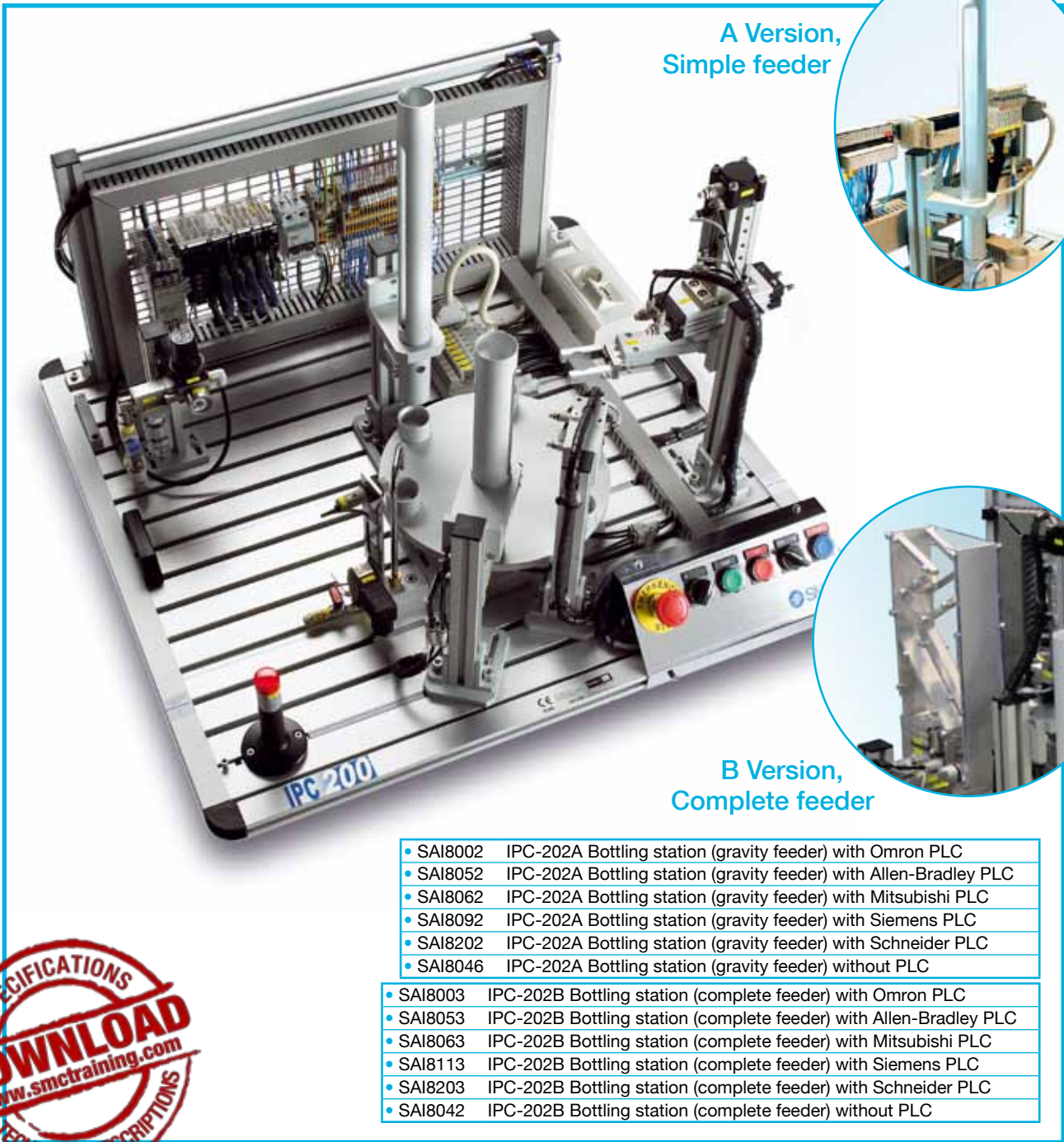
A Version, Simple feeder

B Version, Complete feeder

• SAI8002	IPC-202A Bottling station (gravity feeder) with Omron PLC
• SAI8052	IPC-202A Bottling station (gravity feeder) with Allen-Bradley PLC
• SAI8062	IPC-202A Bottling station (gravity feeder) with Mitsubishi PLC
• SAI8092	IPC-202A Bottling station (gravity feeder) with Siemens PLC
• SAI8202	IPC-202A Bottling station (gravity feeder) with Schneider PLC
• SAI8046	IPC-202A Bottling station (gravity feeder) without PLC
• SAI8003	IPC-202B Bottling station (complete feeder) with Omron PLC
• SAI8053	IPC-202B Bottling station (complete feeder) with Allen-Bradley PLC
• SAI8063	IPC-202B Bottling station (complete feeder) with Mitsubishi PLC
• SAI8113	IPC-202B Bottling station (complete feeder) with Siemens PLC
• SAI8203	IPC-202B Bottling station (complete feeder) with Schneider PLC
• SAI8042	IPC-202B Bottling station (complete feeder) without PLC

● IPC-203 - Palletizing station

This station reproduces a 25 positions automatic warehouse by using a system based on three cartesian coordinate (two horizontal electric axes and one vertical pneumatic axis).

• SAI8004	IPC-203 Palletizing station with Omron PLC
• SAI8054	IPC-203 Palletizing station with Allen-Bradley PLC
• SAI8064	IPC-203 Palletizing station with Mitsubishi PLC
• SAI8094	IPC-203 Palletizing station with Siemens PLC
• SAI8204	IPC-203 Palletizing station with Telemechanique PLC
• SAI8043	IPC-203 Palletizing station without PLC

ESPECIFICATIONS
DOWNLOAD
www.smctraining.com
TECHNICAL DESCRIPTIONS

IPC - 200

IPC-200 - With this system you could...

IPC-200 comes up with different practical activities targeting skills in the technologies featuring in the table (below).

TECHNOLOGIES

SKILLS	ELECTRICAL PANEL	PNEUMATICS	VACUUM	ELECTRIC MOTORS	SENSORS	CONTINUOUS PROCESSES	PROGRAMM. CONTROLLERS	MANIPULATORS
ANALYSIS	■	□	□	□	■	■ ●	■	■
TROUBLESHOOT.	■	■	□		■	■ ●	□	■
DESIGNING	■	□	□	□	■	■ ●	■	■
TECH DOCUM. CREATION	■	□	□	□	■	■ ●	■	■
TECH DOCUM. UNDERSTANDING	■	□	□	□	■	■ ●	■	■
OPERATION	■	■		□	■	■ ●	■	■
PROGRAMMING						■ ●	■	
SETTING UP								

■ This shows how the IPC-200 is suitable to develop skills in the specific technology.

□ This shows that IPC-200 can help develop skills in the specific technology even though there are other more appropriate products in the range.

● Developing skills in technology applicable to IPC-201C.

@ eLEARNING-200

Find out more about the theory behind the technologies developed in IPC-200 with our eLEARNING-200 courses.

INDUSTRIAL COMMUNIC.	MOTION CONTROL	SCADA / HMI	AUTOMATED SYSTEMS
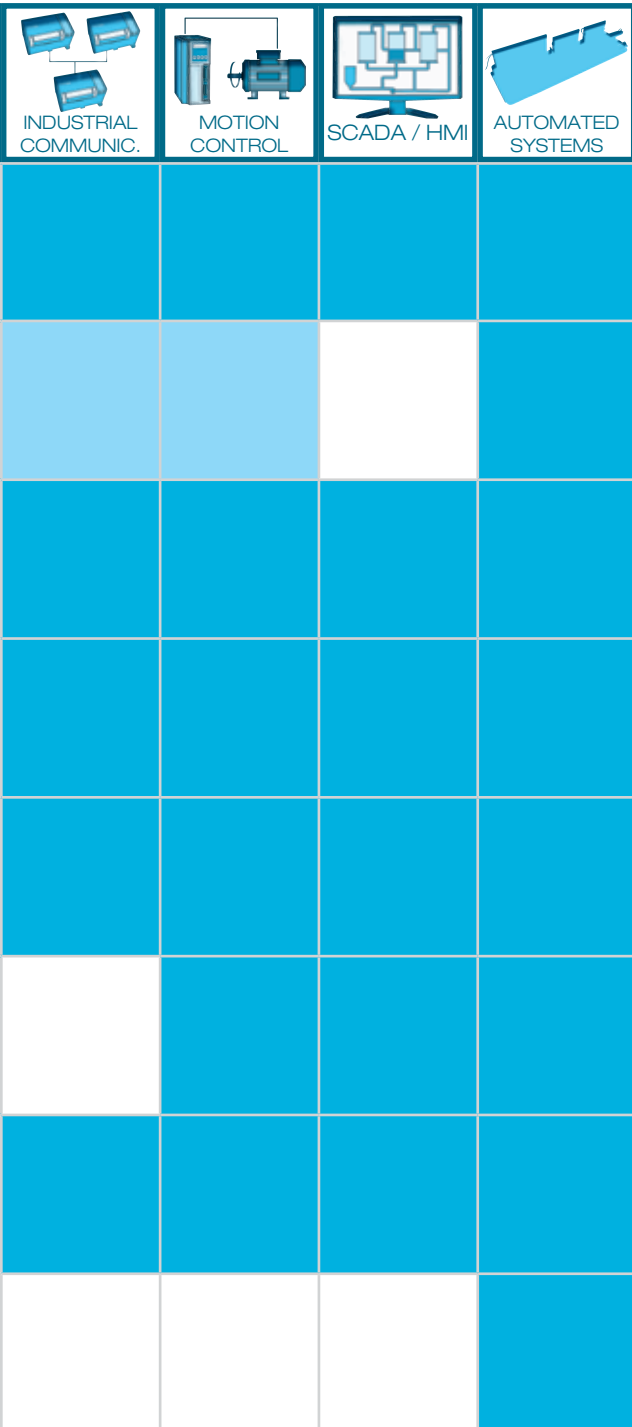
RELATED eLEARNING-200 COURSES

Introduction to industrial automation (SMC-100)

Principles of pneumatics (SMC-101)

Introduction to electricity (SMC-102)

DC electricity (SMC-103)

Solid state (SMC-105)

Introduction to wiring (SMC-106)

Introduction to electric motors (SMC-107)

Sensors technology (SMC-108)

Programmable controllers (SMC-109)

Process controls (SMC-110)

Motion control (SMC-112)

Industrial communications (SMC-114)

Supervision and control systems (SMC-115)

See eLEARNING-200 chapter for more information

■ IPC-200 - Options

IPC-200 has a series of optional extras.

• Support legs

Makes the system self-standing without needing a worktop or bench.

• SAI8904	IPC-201C LEGS KIT
• SAI8905	IPC-201 / 202 / 203 LEGS KIT

• Programming tools

The programming tools comprise the appropriate programming software, the industrial system communication programming software and cables for the chosen PLC.

See Programming Tools chapter

• SCADA: Supervisory Control and Data Acquisition

This is a standard-use software application in industry, making it easier to supervise and control processes from the computer screen.

• SAI8006	SCADA application IPC-200

• IPC-200 application for autoSIM-200

We have a 3D application where users can simulate, supervise and control IPC-201C from an autoSIM environment.

• SAI2533	3D simulator for IPC-200, 1 license
• SAI2534	3D simulator for IPC-200, 8 licenses
• SAI2535	3D simulator for IPC-200, 16 licenses

autoSIM is required. See autoSIM-200 chapter

■ IPC-200 - Configuration

Getting the right IPC-200 specification is as easy as:

• Steps to follow

1.- Choose the PLC.

2.- Select the required stations.

3.- Add any optional extras.

• Considerations

- Any station can operate independently and be purchased separately.

- To work with the full system, you need either option for the IPC-202 station (A or B).

● IPC-200 - Technical features

IPC-201
800x762x550mm

Modules	Sensors (type & quantity)	Input / Output
Left side tank module Middle tank module Right side tank module	Capacitive (x6) Pressure switch (x3) Pressure transducer (x1)	Digital 14/8

Other devices (quantity)	Actuators (type & quantity)
Display (x1) Manual valve (x2)	DC motor (x1) Fluid solenoid valve (x3)

IPC-201C
1200x762x600mm

Modules	Sensors (type & quantity)	Input / Output
Auxiliary tank module Left side tank module Middle tank module Right side tank module	Capacitive (x6) PT100 temperature probe (x1) Flow switch (X1) Differential pressure (x1) Pressure transducer (x1)*	Digital 16/16 Analog 5/4

Other devices (quantity)	Actuators (type & quantity)
PID controller (x3) PWM regulator (x2) Signal conditioning (x1) Displays (x3) Manual valve (x4) Breakdown simulation system(x1)	DC pump (x1) Peltier valves (x2) DC motor (x1) Proportional valve (x1) Fluid solenoid valve (x7) Pressure transducer (x1)*

* Included in electro-pneumatic pressure regulator

IPC-202
(OpcA) 800x760x615
(OpcB) 800x760x550

Modules	Sensors (type & quantity)	Input / Output
Bottle feeder - 202A - Simple - 202B - Complete Insertion on revolving plate Dividing plate Bottle filling Lid feeder Lid pressing Extraction from the index plate	Auto switch, Reed type (OptA x11/ OptB x16) 3 wires auto switch (x2) Photoelectric (x1)	(opc A) Digital 15/10 (opc B) Digital 24/16

Other devices (quantity)	Actuators (type & quantity)
Manual valve (x1) Breakdown simulation system (optional)	Pneumatic linear (OpcA x5/OpcB x9) Pneumatic rotolinear (x2) Pneumatic rotary actuator (OptA x0/OptB x1) Pneumatic gripper (OptA x3/OptB x4)

IPC-203
800x762x495mm

Modules	Sensors (type & quantity)	Input / Output
Waiting position Vertical shaft Linear electric shaft	Fibre optic (x2) Vacuum pressure switch (x1) Auto switch, Reed type (x2)	Digital 16/15

Other devices (quantity)	Actuators (type & quantity)
Positioning drivers (x2) Vacuum pad (x1) - Vacuum ejector (x1)	Pneumatic linear (x1) Electrical linear (x2) Servomotor (x2)