

## TRAINING UNIT FOR VARIOUS TECHNOLOGIES



### Experimental capabilities

- **Automation: grafkets study**
- **Automation: Analysis of wiring diagrams.**
- **Automation: programming (wired logic PLCs ...)**
- **Temperature control: Study and parameter setting of control on/off**
- **Temperature control: Study and PID control parameters.**
- **Pneumatic: Study of pneumatic components technologies and chains of actions**
- **Pneumatic: technological choice of the components and mapping according to the functions to be performed and the defined context**
- **Electrotechnics: Study of asynchronous motor control circuits.**
- **Electrotechnics: Study of frequency inverters parameter settings.**
- **Electrotechnics: Study of the motors connections**

## Operating principle

The bench IPT 050 is a compact bench for technological education of

- Electrotechnics (studies of the control and the power)
- The pneumatic (study of the control circuits, valves, actuators, and sensors)
- Regulation (study of temperature control on/off and PID)
- Automation (study of grafquets, of programming, with a direct implementation of an operative part

It integrates on its 4 sides, a total of 4 independent workstations allowing to simultaneously conduct 4 practical work

The sides control, pneumatic and electrotechnics, allow a wide variety of wiring by the students, allowing them to compare different similar technologies, and to understand the limitations but also their interest.

The automation station equipped with removable breadboards allows to work on a wide variety of automation technologies (PLC brands, automation technologies ...). You can also if you wish, to design your own automation breadboards.

The compact and mobile chassis makes the IPT 050 movable and easily transportable.

## Illustrations for automatics training unit

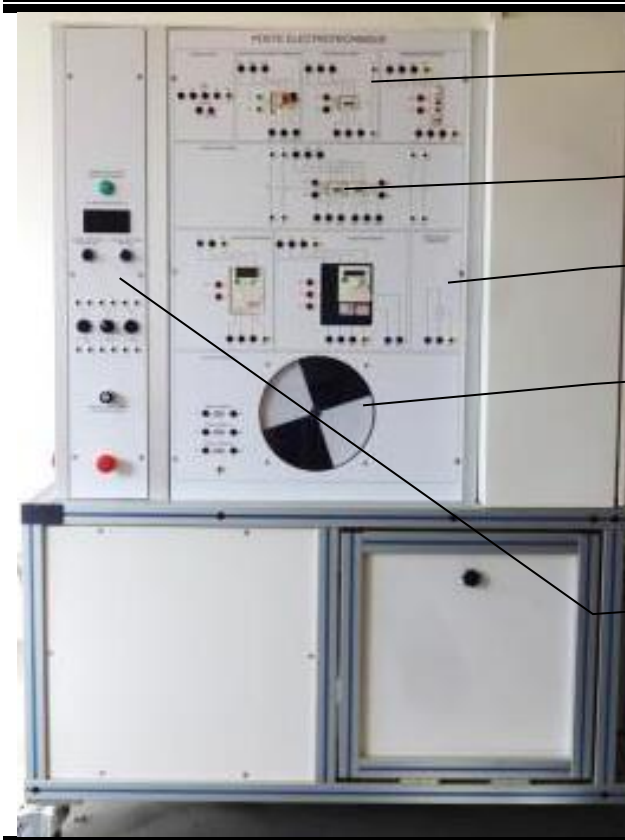
## Technical details for automatics training unit



1. Anodized aluminum structure equipped with 4 braked swivel castors
2. 4 working surfaces each integrating a specific and autonomous workstation, and a control panel dedicated
3. Electrical cabinet of distribution of electric power on the 4 posts as well as the integration of automation breadboards
4. Operative part conveying and drilling simulation consists of 1 conveyor drive by asynchronous geared motor worm gear and wheel, 2 cylinders for regulating the circulation of products to the workstation, and a drilling simulation cylinder
5. Liftable hood to reach the interior of the operative part - Secured by magnetic sensor coupled to a safety relay cutting off the power distribution over the whole of the operative part
6. PLC breadboard crouzet millenium 3 having 16 inputs / 10 outputs with connection plug
7. Storage for unused automation breadboards (on lateral side of the bench)
  - Other breadboards on request

## Illustrations for electrical engineering training unit

## Technical details for electrical engineering training unit



- 10. Power supply 400V 4-pole + 24Vdc, motor circuit breaker magnetothermic, switch of 1 direction with auxiliary contacts of self-maintaining and soft starter
- 11. Reversing contactor with auxiliary contact NO and NC allowing the wiring in the rules of the control circuits with functions of self-holding and prohibition of drive direction inversion
- 12. Single-phase inverter, three-phase inverter, dissipation resistance
- 13. Three-phase asynchronous motor with flywheel disk and visualization disk. Speed sensor on periphery of the disk. Winding on double sink socket to allow the coupling star / triangle
- 14. Control panel consisting of the motor controls on dry contact switches and buttons, a speed display, 2 speed adjustment potentiometers for each of the inverters.

## Illustrations for pneumatics training unit

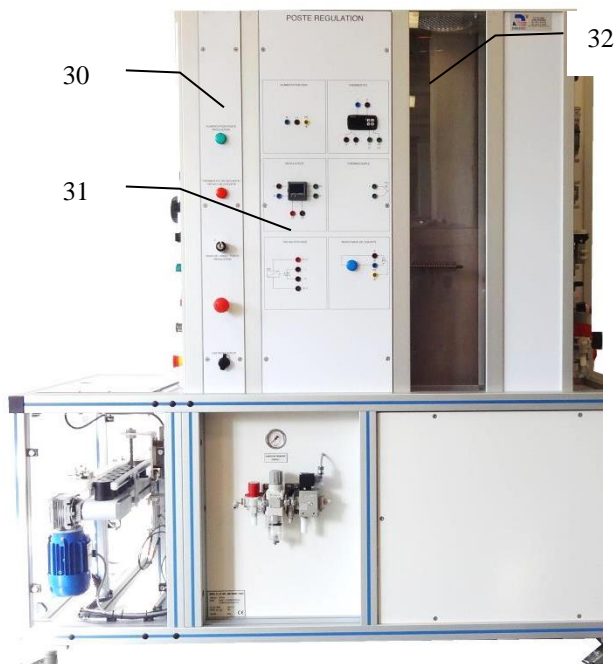
## Technical details for pneumatics training unit



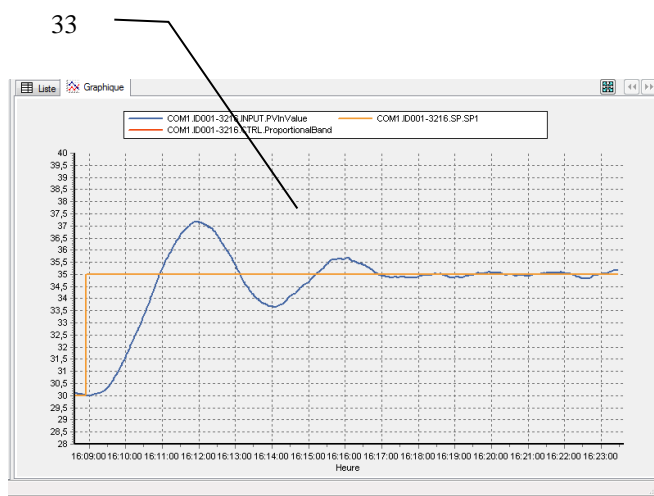
- 20. Control panel consisting of the main power of the post, the distribution of 24Vdc on double sink sockets, status lights of the sensors, dry contact buttons and switches to realize the electrical control circuits, emergency stop
- 21. Pneumatic panel consisting of a FRL unit with a pressurizing and purging valve, manometer, 3/2 distributors, 5/2 monostable and bistable, with mechanical, pneumatic or electrical control, single-acting cylinder, double-acting cylinder, suction cup with venturi, a roller sensor, inductive sensor, ILS sensor and programmable pressure/vacuum switch
- 22. Unit with steel storage drawers for all the accessories (cables, pneumatic hoses, documentation)

## Illustrations for temperature control unit

## Technical details for temperature control unit



30. Control panel consisting of the main power of the post, emergency stop
31. Control Panel consisting of a 230Vac power, programmable on/off thermostat with relay output, a digital controller with communication USB on the PC, a static relay (SSR), 1 LED display of the operating status of the heating resistor, and connecting sockets of the temperature measuring thermocouple.
32. Temperature control column incorporating an electrical resistance 230V with fins, a safety thermostat, the temperature measuring thermocouple. Wall made of polycarbonate and aluminum. Protection grid in the upper part
33. Data acquisition and parameter setting of the regulation by dedicated software / connection over USB jack - Reference programs provided



## Services required

## Documentation

- Electricity supply : 400 Vac – 50 Hz – 16 A
- Electrical network : 3 phase + Neutral + Earth.
- Compressed air supply : 5-6 bars (dry air)
- Dimensions: (LxlxH mm): 1680 x 800 x 1850
- Weight (Kg): 200

- User's manual
- Pedagogical manual
- Technical documentation of the components
- Lab exercises
- Programs (automaton, temperature control, sensors, variators...)
- Temperature control software, and automaton software
- Certificate of conformity CE

Note : if the equipment installation is operated by our staff, all supplies and exhaust connections required must stand at less than 2m from the machine

## OPTIONAL ELECTRICAL BREADBOARDS FOR AUTOMATICS TRAINING UNIT

- Breadboard logic controled by relays
- Breadboards with Siemens S7-200
- Breadboard with siemens S7-300
- Breadboard with schneider M221
- Breadboard schneider M340
- Breadboard Siemens S7-200 + IHM Siemens
- Breadboard siemens S7-300 + IHM Siemens
- Breadboard schneider M221 + IHM Schneider
- Breadboard schneider M340 + IHM Schneider
- Breadboard Crouzet millenium
- Ref IPT 051 (S-S IPT050)
- Ref IPT 052 (S-S IPT050)
- Ref IPT 053 (S-S IPT050)
- Ref IPT 054 (S-S IPT050)
- Ref IPT 055 (S-S IPT050)
- Ref IPT 056 (S-S IPT050)
- Ref IPT 057 (S-S IPT050)
- Ref IPT 058 (S-S IPT050)
- Ref IPT 059 (S-S IPT050)
- Ref IPT 05A (S-S IPT 050) / 1 coming with IPT 050