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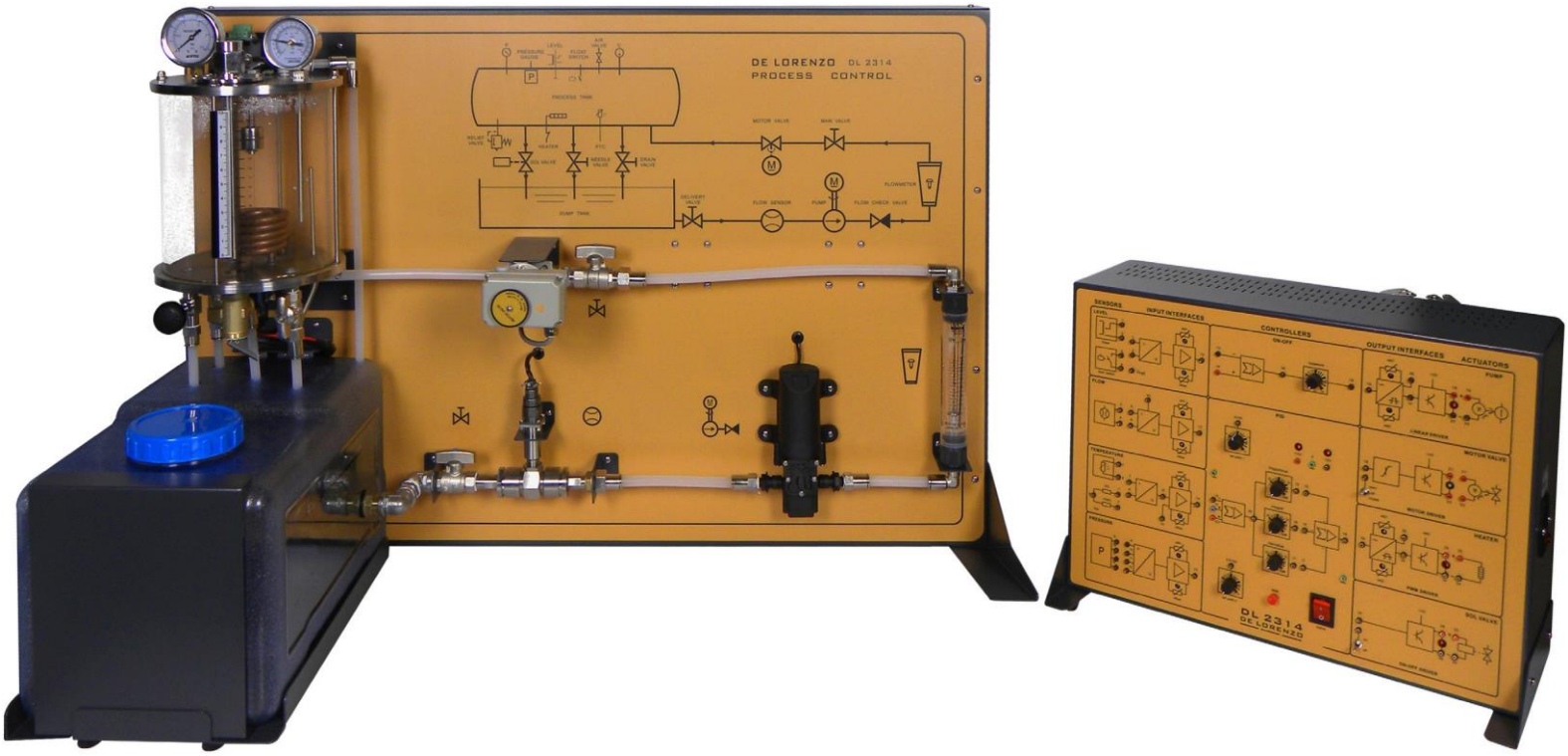
DL NGL

NEXT GENERATION LABS



DL NGL-2314

Module for the study of process control

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System for studying the field of process control. It includes valves, pumps, tanks, sensors and drives. It consists of an experimental module (process panel) and of a control module with integrated power supply (control panel).

With this trainer, students will be guided step by step in the following experiments; how to calibrate a sensor, how to obtain the characteristic of a static process and the time constant, how to control a process by ON-OFF, Proportional, Proportional-Integral, Proportional-Derivative, Proportional-Integral-Derivative controllers.

Ideal for 4 students working at the same time. Vocational and technical schools. For courses in: **Automation, Sensors and Actuators, PID, Process Control.**

Main characteristics

- The trainer allows training flexibility for all process automation topics and consists of two different sections: PROCESS PANEL and CONTROL PANEL.
- With the detailed teaching manual, students will be guided step by step in learning: how to calibrate sensors, how to control a process with ON-OFF and Proportional-Integral-Derivative system.
- Each experiment, described in detail in the teaching manual, is related to real industrial applications.
- The modular trainer offers all modules and components needed for basic and advanced education in process control and automation.
- it is possible to connect to the teaching system a personal computer with a special interface module and software (PC with **DL 1893** and **DL 2314SW**).

LIST OF EXPERIMENTS

- Regulation of the level sensor
- Characteristics of the pump motor
- Characteristics of the pump
- Characteristics of the static process
- Process time constant
- ON - OFF level control
- ON - OFF level control with "solenoid valve"
- ON - OFF level control with "float switch"
- Proportional closed loop control of the level
- Proportional-Integral closed loop control of the level
- Proportional-derivative closed loop control of the level
- Proportional-Integral-Derivative closed loop control of the level
- Flow sensor
- Proportional closed loop control of the flow rate
- Proportional-integral closed loop control of the flow rate
- Proportional-derivative closed loop control of the flow rate
- Proportional-Integral-Derivative closed loop control of the flow rate
- Temperature sensor
- Measurement of heating characteristics
- Proportional closed loop control of the temperature

- Closed loop Proportional-Integral control of the temperature
- Closed loop Proportional-Derivative control of the temperature
- Closed loop Proportional-Integral-Derivative control of the temperature
- Pressure sensor
- Pressure sensor as a level sensor
- ON - OFF control of the level through the pressure sensor

TECHNICAL SPECIFICATIONS

The process control trainer allows you to study and carry out practical tests in the field of process control.
Power supply: single-phase from mains.

- **The process panel** includes:
  - Water tank: capacity 20 litres approx.
  - Motor pump for water recirculation: 6 litres/minute
  - Motor valve: used for the control of the water flow rate
  - Motor pump with thermal protection and non-return valve
  - Flow sensor: 8000 pulses/litre
  - Piping (for process water supply and water draining from the process tank)
  - Delivery valve (main valve for water supply)
  - Flow rate turbine meter (flow sensor with volumetric measurement turbine)
  - Visual flowmeter (flow rate indicator)
  - Manual valve (to reduce the water flow rate)
  - Pressurized tank: capacity 5 litres approx., complete with:
    - Capacitive level sensor and metric scale to measure the water level (cm or mm)
    - Float switch (to detect the water level inside the pressurized tank)
    - Heating element; Temperature sensor (PT100) and a thermometer to measure the temperature inside the process tank (°C or °F)
    - Pressure sensor and manometer to measure the pressure (bar or psi)
    - 4 types of valves (3 manual and 1 controlled)
    - Safety valve
- **The control panel** includes:
  - Input interface (Sensors)
    - LEVEL transducer
    - FLOW transducer
    - TEMPERATURE transducer
    - PRESSURE transducer
  - Control interface (Controllers)
    - ON – OFF
    - ON – OFF with hysteresis
    - PID (P, PI, PD, PID)
  - Output interface (Actuators)
    - Linear driver for PUMP
    - Driver for MOTOR VALVE
    - PWM driver for HEATING ELEMENT
    - ON – OFF driver for SOLENOID VALVE