

RT 210

PROCESS CONTROL RIG



- **Compact benchtop unit to control temperature, filling level, flow rate**
- **Complete process control via software**
- **Simulation of various system errors**

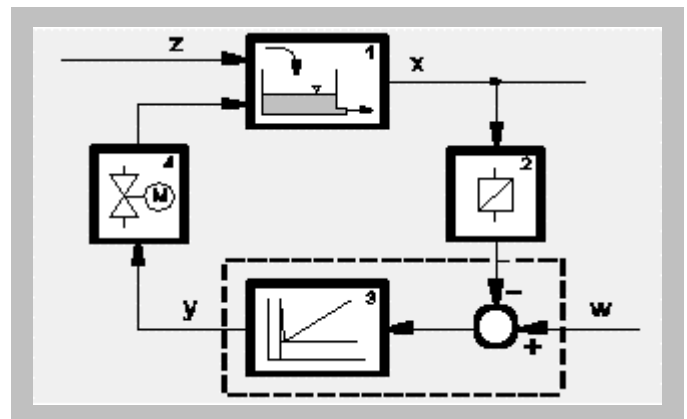


Technical description

The unit is used as an introduction to the subject of control technology. Temperature, flow rate and filling level control systems are used as examples to provide clear and practical fundamental information. The experimental system is controlled from the PC screen (not included in scope of supply). The supplied process control and illustration programs make it possible to carry out the experiment as well as record measurement reports and store measured data. Important process variables are shown digitally on the unit itself. All components of the unit are clearly mounted on a metal sheet. The storage and process tanks are transparent for better viewing of the process. The unit is designed as a experimental unit for tabletop use. It requires only an electrical power connection for operation.

Experiments

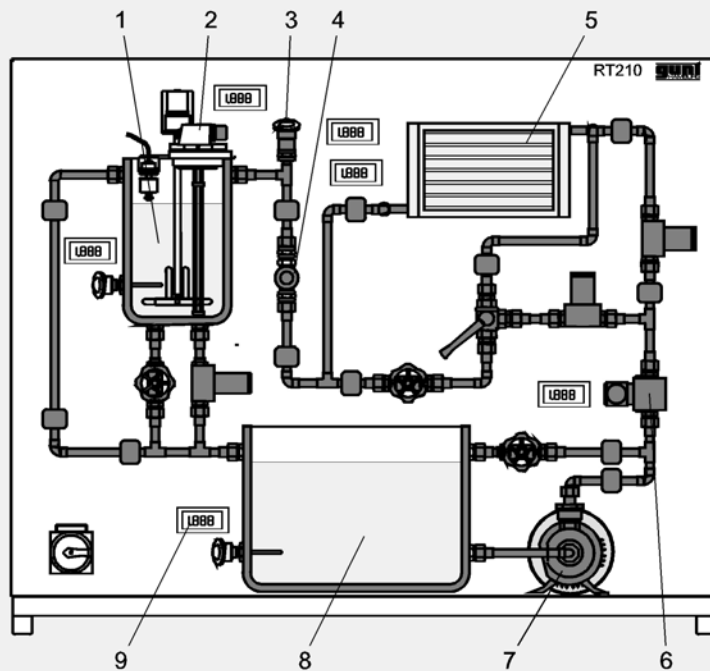
- Determination of system parameters from the step response
- Comparison of various types of controller - P, PI and PID - as well as their suitability for different systems
- Controller parameterization according to Ziegler-Nichols
- Two-step control
- Three-step control
- Cascade control
- Definition of control quality
- Simulation, detection and correction of faults
- Experiments with overheating protection and overflow protection equipment



1 controlled system, 2 level gauge, 3 controller (PID), 4 control valve, w set-point value, x actual value, y manipulated variable, z interference variable

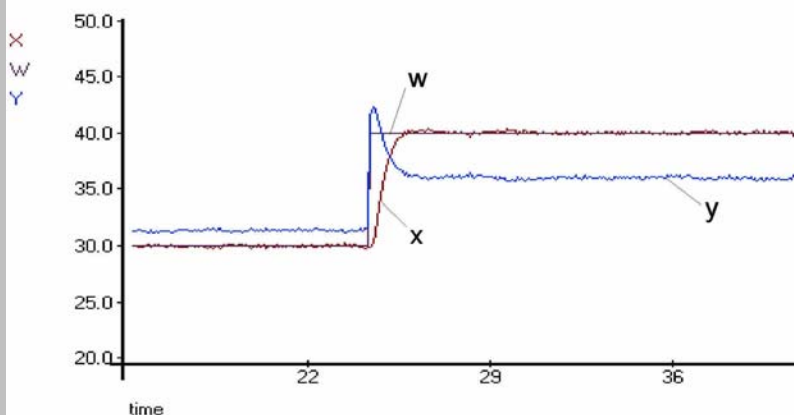
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1 process tank with agitator and heater, 2 filling level sensor, capacitive, 3 temperature sensor (PTC), 4 flow rate sensor (vane-type), 5 cooler with fan, 6 control valve, 7 pump, 8 supply tank, 9 digital display

Display of experiment signals on screen, example



Step response with optimised controller parameters
w setpoint value, x actual value, y manipulated variable

Specification

- [1] Basic experiments in control systems
- [2] Control of filling level, flow rate, temperature, two- and three-step control, cascade control
- [3] Benchtop unit, all components arranged on a metal sheet
- [4] 2 Plexiglas process tanks, one agitator
- [5] Simulation of malfunction of temperature sensor, flow rate sensor, proportional valve, pump, fan and heater
- [6] 6 digital displays
- [7] Data-acquisition card with software for process control and evaluation under Windows NT/2000/XP
- [8] 230V, 50Hz, 1 phase,
- [9] l x h x w 1150x920x500mm, 115kg
- [10] 60-page manual, also as PDF file

Technical data

Centrifugal pump: max. head 30m, max. flow rate 10ltr/min; process tank: 6ltr
Heater: 460W
Water cooler with integrated fan
Measuring ranges: filling level: 0...250mm; temperature: 0...100°C; flow rate: 0...10ltr/min
System requirements: PC with Pentium III 600MHz, 128MB RAM, 100MB free hard disc space, PCI slot, graphics card 1024x768 pixels, true color

Dimensions and weight

l x w x h : 1150 x 500 x 920 mm
Weight : approx. 115 kg

Connections

230V, 50Hz, 1 phase

Scope of delivery

1 basic unit, 1 data-acquisition card + software, 1 instruction manual

Order details

080.21000 RT 210 Process Control Rig