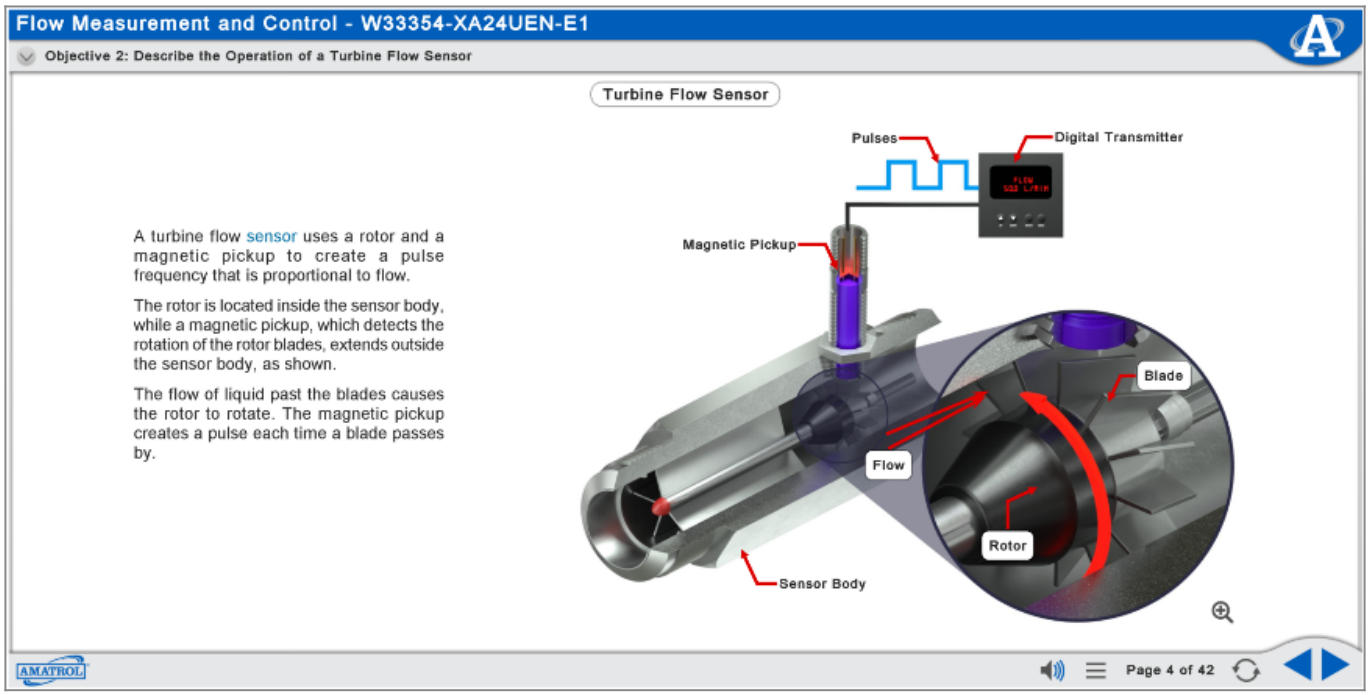
Level/Flow Process Control | Interactive eLearning



eLearning Course: MB270

Level and Flow Process Control teaches two of the most common types of process control systems, flow and liquid level. Amatrol's Multimedia Courseware – Level/Flow Process Control course covers process control safety, instrument tags, piping and instrumentation diagrams, and level measurement, then moves into system control functions such as liquid level control, automatic control methods, basic flow measurement and control, and control loop performance.

Level / Flow Process Control

Amatrol's eLearning curriculum is unique in that it thoughtfully combines in-depth theoretical knowledge with practical, hands-on skills. This powerful combination of knowledge and skills solidifies understanding and creates a strong foundation for pursuing more advanced skills.

For example, the Level and Flow Process Control eLearning course covers important topics, such as:

Introduction to Process Control
Learners begin with an introduction to process control concepts, safety, manual control, and sight gauges. Individual lessons focus on topics like common process control applications and variables, open- and closed-loop process control systems, basic rules of process safety, and function and operation of a sight gauge. Learners will also practice skills, such as determining the manipulated and controlled variables given process descriptions, performing a lockout, manually controlling the liquid level in a tank using open and closed loop methods, and using a sigh glass to determine liquid level.

Instrument Tags
Learners will study instrument tags, including block diagrams, instrument tag fundamentals, and interpreting instrument tags. Individual lessons focus on topics like function of a block diagram, types of information described by an instrument tag, how an instrument tag identified the function of a device, and identifying the loop in which a device is connected. Learners will also practice skills, such as drawing a block diagram, identifying the type and location of a device using an instrument tag, and drawing an instrument tag given device information.

Piping and Instrumentation Diagrams
Using Amatrol's process control eLearning course, learners will study piping and instrumentation diagrams,

including line symbols; valve and pump symbols; level and flow sensing elements; pressure and temperature sensing elements; and instrument index. Individual lessons focus on topics like the function and valve symbols of a P&ID; liquid level and flow sensing element symbols; pressure and temperature sensing element symbols; and how to interpret information contained in an instrument index. Learners will also practice skills, such as identifying P&ID line symbols, identifying pump symbols, identifying level and flow sensing element symbols, and drawing a P&ID given an actual process control system.

Loop Controllers
In this module, learners will study loop controllers, including construction, functions, parameters, and manual operation of an electronic loop controller. Individual lessons focus on topics like Honeywell loop controller navigation, common types of parameter groups, and connecting a loop controller to a final control element. Learners will also practice skills, such as navigating a Honeywell loop controller menu system, changing loop controller parameters, and connecting and operating a loop controller in manual mode.

Final Control Elements
Learners will study final control elements, including I/P converter operation and calibration, and proportional control valves. Individual lessons focus on topics like the construction and operation of an I/P converter, I/P converter calibration, types of proportional valves, and types of diaphragm actuator valve configurations. Learners will also practice real-world skills, such as connecting and operating an I/P converter. calibrating an I/P converter using a multimeter or loop calibrator, connecting and operating a diaphragm actuator proportional valve, and adjusting the spring of a diaphragm actuator proportional valve.

Level Measurement
Using Amatrol's level measurement eLearning course, learners will study level sensor operation, display scaling, and level sensor signal measurement. Individual lessons focus on topics like liquid level measurement using a pressure sensor and a bubbler; variable capacitance pressure sensors; how to convert pressure sensor output signals to pressure units; and the function and operation of a process meter. Learners will also practice skills, such as connecting and operating a variable capacitance pressure, converting liquid level units to fluid pressure units, using a multimeter to test pressure sensor operation, and configuring a Honeywell UDI 1700 Process Meter to display a process variable.

Liquid Level Control
Learners begin the liquid level control eLearning course by studying both relay-based and process meter on/off controls, closed loop liquid level control, and discrete input/output functions. Individual lessons focus on topics like the operation of an on/off process control system, the effect of disturbances on a closed loop system, the function of loop controller alarm outputs, and components of a Honeywell UDI 1700. Learners will also practice skills, such as controlling the liquid level in a tank using an on/off control, configuring and operating a Honeywell UDC 3500 controller-based closed-loop liquid level system, and connecting and operating alarms on a controller.

Methods of Automatic Control
In this module, learners will study methods of automatic control, including performance concepts, proportional control, proportional-integral control, and proportional-integral-derivative control. Individual lessons focus on topics like steady and transient control system states, importance of a proportional band, integral reset control operation, and proportional derivative control. Learners will also practice skills, such as controlling a process using proportional control, PI control, PD control, and PID control.

Basic Flow Measurement and Control
Learners will study basic flow measurement and control, including flow measurement units, flow sensors, flow measurement, and basic flow control. Individual lessons focus on topics like converting between velocity and volumetric flow rate units, turbine and paddlewheel flow sensors, digital transmitters, and operation of a closed-loop flow control system. Learners will also practice skills, such as converting between volumetric and mass flow rates, measuring flow using a paddlewheel flow sensor, and operating a flow control loop using a paddlewheel sensor.

Control Loop Performance
Using Amatrol's control loop performance eLearning course, learners will study accuracy, repeatability and resolution of control loops, open-loop tuning, and closed-loop tuning. Individual lessons focus on topics like control loop optimization, methods of expressing instrument accuracy, loop tuning, and tuning software. Learners will also practice skills, such as calculating resolution in units of measured parameters, tuning a control loop using the

process reaction curve method, and calculating instrument accuracy.

Additional Info

Requires:

- Computer (see Computer Requirements)

Options:

- Level and Flow Process Control Learning System (T5552A)

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