

# Industrial Automation and Control - Video course

1. Lecture 1: Introduction to Industrial Automation and Control
2. Lecture 2: Architecture of Industrial Automation Systems.
3. Lecture 3: Introduction to sensors and measurement systems
4. Lecture 4: Temperature measurement
5. Lecture 5: Pressure and Force measurements
6. Lecture 6: Displacement and speed measurement
7. Lecture 7: Flow measurement techniques
8. Lecture 7: Measurement of level, humidity, pH etc
9. Lecture 8: Signal Conditioning and Processing
10. Lecture 10: Estimation of errors and Calibration
11. Lecture 3: Introduction to Process Control.
12. Lecture 4: P-- I -- D Control
13. Lecture 5: Controller Tuning.
14. Lecture 6: Implementation of PID Controllers
15. Lecture 7: Special Control Structures : Feedforward and Ratio Control.
16. Lecture 8: Special Control Structures : Predictive Control, Control of Systems with Inverse Response
17. Lecture 9: Special Control Structures : Cascade Control, Overriding Control, Selective Control, Split Range Control
18. Lecture 10: Introduction to Sequence Control, PLCs and Relay Ladder Logic
19. Lecture 11: Sequence Control : Scan Cycle, RLL Syntax
20. Lecture 12: Sequence Control : Structured Design Approach
21. Lecture 13: Sequence Control : Advanced RLL Programming
22. Lecture 14: Sequence Control : The Hardware environment
23. Lecture 15: Control of Machine tools : Introduction to CNC Machines
24. Lecture 16: Control of Machine tools : Analysis of a control loop
25. Lecture 17: Introduction to Actuators : Flow Control Valves
26. Lecture 18: Hydraulic Actuator Systems : Principles, Components and Symbols
27. Lecture 19: Hydraulic Actuator Systems : Pumps and Motors,
28. Lecture 20: Proportional and Servo Valves
29. Lecture 20: Pneumatic Control Systems : System Components
30. Lecture 21: Pneumatic Control Systems : Controllers and Integrated Control Systems



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## Electrical Engineering

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31.Lecture 22: Electric Drives : Introduction, Energy Saving with Adjustable Speed Drives

32.Lecture 23: Step motors : Principles, Construction and Drives

33.Lecture 24: DC Motor Drives : Introduction, DC--DC Converters, Adjustable Speed Drives

34.Lecture 25: Induction Motor Drives: Introduction, Characteristics, Adjustable Speed Drives

35. Lecture 26 : Synchronous Motor Drives : Motor Principles, Adjustable Speed and Servo Drives

36. Lecture 27 : Networking of Sensors, Actuators and Controllers : The Fieldbus

37. Lecture 28 : The Fieldbus Communication Protocol

38. Lecture 29 : Introduction to Production Control Systems

39. Lecture 30 : Concluding Lecture