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4.2 Types of Aerators 4.3 Savings Determinations Chapter 5: Blowers and Blower Control 5.1 Common Application and Selection Concerns 5.2 Positive Displacement Blowers and Control Characteristics 5.3 Dynamic Blowers Chapter 6: Piping Systems 6.1 Design Considerations 6.2 Pressure Drop 6.3 Control Valve Selection Chapter 7: Instrumentation 7.1 Common Characteristics and Electrical Design Considerations 7.2 Pressure 7.3 Temperature 7.4 Flow 7.5 Analytic Instruments 7.6 Motor Monitoring and Electrical Measurements 7.7 Miscellaneous Chapter 8: Final Control Elements 8.1 Valve Operators 8.2 Guide Vanes 8.3 Motor Basics 8.4 Motor Control 8.5 Variable Frequency Drives Chapter 9: Control Loops and Algorithms 9.1 Control Fundamentals 9.2 Dissolved Oxygen Control 9.3 Aeration Basin Air Flow Control 9.4 Pressure Control 9.5 Most-Open-Valve Control 9.6 Blower Control and Coordination 9.7 Control Loop Timing Considerations 9.8 Miscellaneous Controls Chapter 10: Control Components 10.1 Programmable Logic Controllers 10.2 Distributed Control Systems 10.3 Human Machine Interfaces 10.4 Control Panel Design Considerations Chapter 11: Documentation 11.1 Specification Considerations 11.2 Data Lists 11.3 Process and Instrumentation Diagrams 11.4 Ladder and Loop Diagrams 11.5 One-Line Diagrams 11.6 Installation Drawings 11.7 Loop Descriptions 11.8 Operation and Maintenance Manuals Chapter 12: Commissioning 12.1 Inspection 12.2 Testing 12.3 Tuning 12.4 Training 12.5 Measurement and Verification of Results Chapter 13: Summary 13.1 Review of Integrated Design Procedure 13.2 Potential Problem Areas 13.3 Benefits Appendix A: Example Problem Solutions Appendix B: List of Equations and Variables Bibliography .

Sommario/riassunto

"Proper engineering and execution of aeration control systems is of prime importance to treatment plants, representing a significant savings in labor and energy costs. Taking an integrated, cross-disciplinary approach to this critical process, Aeration Control System Design comprehensively addresses the concept and system design of aeration activated wastewater treatment. Covering complete treatment of aeration system controls, processes, and instrumentation, this hands-on text provides civil and environmental engineers, mechanical engineers, and electrical/instrumentation engineers with theoretical and mathematical treatment of case histories, complete with design procedures and analysis methodology"--