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Nota di contenuto	Handbook of Food Process Design; Contents; Preface; Acknowledgements; About the Editors; Contributors; Volume I; 1: Food Preservation and Processing Methods; Introduction; Purpose of Food Preservation; Food Preservation Methods; References; 2: Food Process Design: Overview; Introduction; Components of Food Process Design; Unit Operations and Complete Process; Process Flow Diagram; Codes, Standards and Recommended Practices; Process Severity, Quality and Safety; References; 3: Units and Dimensions; Introduction; Systems of Measurement; The SI System Definition of Some Derived Physical QuantitiesDimensional Consistency; Precision and Accuracy; Unit Conversions; Guidelines for Using SI Units; References; 4: Material and Energy Balances; Introduction; Fundamentals of Material Balances; Examples of Material Balance Calculations with and without Reaction; Overview of Food Processes; Energy Balances; Examples of Material and Energy Balances in Food Processing; References; 5: Thermodynamics in Food Process Design; Introduction; Thermodynamic Fundamentals; First Law of

Thermodynamics: Conservation of Energy; Second Law of Thermodynamics: Entropy
Application of Thermodynamics in Food SystemsReferences; 6: Chemical Reaction Kinetics Pertaining to Foods; Introduction; Basics of Chemical Reaction Kinetics; Types of Reactions; Fraction Conversion Concept; Temperature Dependence of the Rate Constants; Types of Reactor; Reaction Kinetics Related to Food; Statistical Aspects of Kinetic Modeling; Conclusions; References; 7: Thermal Food Processing Optimization: Single and Multi-objective Optimization Case Studies; Introduction; Types of Optimization Methods; Single-objective Optimization of Thermal Food Processing
Multi-objective Optimization of Thermal Food ProcessingResults and Discussion; Summary and Conclusion; References; 8: Instrumentation, Sensor Design and Selection; Introduction; Classification of Sensors; Measurements and Sensors in Food Process Control Systems; Criteria for Selection of Sensors; Recently Developed Measurement Techniques for Food Processes; Summary; References; 9: Automation and Process Control; Introduction; Food Processing Automation and Control: Current Status; Basic Control Theory; Current Practice and Future Trends in Food Process Automation; Conclusions; References
10: Use of Various Computational Tools and gPROMS for Modelling Simulation Optimisation and Control of Food ProcessesIntroduction; Reactor in Food Processing; Distillation in Food Processing; Extraction in Food Processing; Thermal Treatments in Food Processing; Model-based Techniques in Food Processing: Simulation, Optimisation and Control; Food Properties in Model-based Techniques; Computational Software in Food Processing; Conclusions; References; 11: Fluid Flow and Pump Selection; Introduction; Nature of Fluids; Basic Equations Related to Fluid Flow; Measurement of Flowing Fluids
Pipes, Fittings and Valves

Sommario/riassunto

In the 21st Century, processing food is no longer a simple or straightforward matter. Ongoing advances in manufacturing have placed new demands on the design and methodology of food processes. A highly interdisciplinary science, food process design draws upon the principles of chemical and mechanical engineering, microbiology, chemistry, nutrition and economics, and is of central importance to the food industry. Process design is the core of food engineering, and is concerned at its root with taking new concepts in food design and developing them through production and eventual consumption.<br