

## Handbook Of Food Processing Equipment Food Engineering Series

This handbook has been prepared as a working reference for the safety officer, the environmental engineer, and the consultant. For the safety officer, this handbook provides detailed guidelines and instructions in preparing Right-to-Know Reporting Audits, establishing programs and training employees on hazard awareness, and developing and implementing emergency response programs in the workplace and at off-site operations. For the environmental engineer, this handbook provides extensive technical data on toxic chemical properties and detailed instructional aid on how to properly prepare toxic chemical release inventory reporting. For the environmental consultant, an extensive overview of corrective action technologies is provided.

Food Processing for Increased Quality and Consumption, Volume 18 in the Handbook of Food Bioengineering series, offers an updated perspective on the novel technologies utilized in food processing. This resource highlights their impact on health, industry and food bioengineering, also emphasizing the newest aspects of investigated technologies and specific food products through recently developed processing methods. As processed foods are more frequently consumed, there is increased demand to produce foods that attract people based on individual preferences, such as taste, texture or nutritional value. This book provides advantageous tools that improve food quality, preservation and aesthetics. Examines different frying techniques, dielectric defrosting, high pressure processing, and more Provides techniques to improve the quality and sensory aspects of foods Includes processing techniques for meat, fish, fruit, alcohol, yogurt and whey Outlines techniques for fresh, cured and frozen foods Presents processing methods to improve the nutritional value of foods

Handbook of Food Processing EquipmentSpringer

Retitled to reflect expansion of coverage from the first edition, Handbook of Meat and Meat Processing, Second Edition, contains a complete update of materials and nearly twice the number of chapters. Divided into seven parts, the book covers the entire range of issues related to meat and meat processing, from nutrients to techniques for preservation and extending shelf life. Topics discussed include: An overview of the meat-processing industry The basic science of meat, with chapters on muscle biology, meat consumption, and chemistry Meat attributes and characteristics, including color, flavor, quality assessment, analysis, texture, and control of microbial contamination The primary processing of meat, including slaughter, carcass evaluation, and kosher laws Principles and applications in the secondary processing of meat, including breading, curing, fermenting, smoking, and marinating The manufacture of processed meat products such as sausage and ham The safety of meat products and meat workers, including sanitation issues and hazard analysis Drawn from the combined efforts of nearly 100 experts from 16 countries, the book has been carefully vetted to ensure technical accuracy for each topic. This definitive guide to meat and meat products it is a critical tool for all food industry professionals and regulatory personnel.

In order to successfully produce food products with maximum quality, each stage of processing must be well-designed. Unit Operations in Food Engineering systematically presents the basic information necessary to design food processes and the equipment needed to carry them out. It covers the most common food engineering unit operations in detail, including guidance for carrying out specific design calculations. Initial chapters present transport phenomena basics for momentum, mass, and energy transfer in different unit operations. Later chapters present detailed unit operation descriptions based on fluid transport and heat and mass transfer. Every chapter concludes with a series of solved problems as examples of applied theory.

The Handbook of Air Pollution Prevention and Control provides a concise overview of the latest technologies for managing industrial air pollution in petrochemical, oil and gas, and allied industries. Detailed material on equipment selection, sizing, and troubleshooting operations is provided along with practical design methodology. Unique to this volume are discussions and information on energy-efficient technologies and approaches to implementing environmental cost accounting measures. Included in the text are sidebar discussions, questions for thinking and discussing, recommended resources for the reader (including Web sites), and a comprehensive glossary. The Handbook of Air Pollution Prevention and Control also includes free access to US EPA's air dispersion model SCREEN3. Detailed examples on the application of this important software to analyzing air dispersion from industrial processes and point sources are provided in the Handbook, along with approaches to applying this important tool in developing approaches to pollution prevention and in selecting control technologies. By applying SCREEN3, along with the examples given in the Handbook, the user can: evaluate the impact of processes and operations to air quality, and apply the model to assess emergency scenarios to help in planning, to develop environmental impact assessments, to select pollution control technologies, and to develop strategies for pollution prevention. Two companion books by Cheremisinoff are available: Handbook of Water and Wastewater Treatment Technologies, and Handbook of Solid Waste Management and Waste Minimization Technologies. Uniquely combines prevention and control concepts while covering the practices and technologies that are applied to the prevention of air pollution in the chemicals manufacturing, oil and gas, iron and steel, and pharmaceutical industries, and to the cleaning and control of industrial air emissions. Provides a bridge for today's environmental manager by focusing on an integrated approach to managing air pollution problems within industrial operations. Shows you how to calculate financial returns from pollution prevention projects.

Widely regarded as a standard work in its field, this book introduces the range of processing techniques that are used in food manufacturing. It explains the principles of each process, the processing equipment used, operating conditions and the effects of processing on micro-organisms that contaminate foods, the biochemical properties of foods and

their sensory and nutritional qualities. The book begins with an overview of important basic concepts. It describes unit operations that take place at ambient temperature or involve minimum heating of foods. Subsequent chapters examine operations that heat foods to preserve them or alter their eating quality, and explore operations that remove heat from foods to extend their shelf life with minimal changes in nutritional quality or sensory characteristics. Finally, the book reviews post-processing operations, including packaging and distribution logistics. The third edition has been substantially rewritten, updated and extended to include the many developments in food technology that have taken place since the second edition was published in 2000. Nearly all unit operations have undergone significant developments, and these are reflected in the large amount of additional material in each chapter. In particular, advances in microprocessor control of equipment, 'minimal' processing technologies, genetic modification of foods, functional foods, developments in 'active' or 'intelligent' packaging, and storage and distribution logistics are described. Developments in technologies that relate to cost savings, environmental improvement or enhanced product quality are highlighted. Additionally, sections in each chapter on the impact of processing on food-borne micro-organisms are included for the first time.

Handbook of Agricultural and Farm Machinery, Third Edition, is the essential reference for understanding the food industry, from farm machinery, to dairy processing, food storage facilities and the machinery that processes and packages foods. Effective and efficient food delivery systems are built around processes that maximize efforts while minimizing cost and time. This comprehensive reference is for engineers who design and build machinery and processing equipment, shipping containers, and packaging and storage equipment. It includes coverage of microwave vacuum applications in grain processing, cacao processing, fruit and vegetable processing, ohmic heating of meat, facility design, closures for glass containers, double seaming, and more. The book's chapters include an excellent overview of food engineering, but also regulation and safety information, machinery design for the various stages of food production, from tillage, to processing and packaging. Each chapter includes the state-of-the art in technology for each subject and numerous illustrations, tables and references to guide the reader through key concepts. Describes the latest breakthroughs in food production machinery Features new chapters on engineering properties of food materials, UAS applications, and microwave processing of foods Provides efficient access to fundamental information and presents real-world applications Includes design of machinery and facilities as well as theoretical bases for determining and predicting behavior of foods as they are handled and processed

This book provides a general technical and mechanical background for the basic processing machinery now used for making snacks, baked goods and confectionery. It covers the basic principles, machine design, function, operation and output.

Frozen foods make up one of the biggest sectors in the food industry. Their popularity with consumers is due primarily to the variety they offer and their ability to retain a high standard of quality. Thorough and authoritative, the Handbook of Frozen Food Processing and Packaging provides the latest information on the art and science of cor

Packed with case studies and problem calculations, Handbook of Food Processing: Food Preservation presents the information necessary to design food processing operations and goes on to describe the equipment needed to carry them out in detail. The book covers every step in the sequence of converting raw material to the final product. It also discusses the most common food engineering unit operations and food preservation processes, such as blanching, pasteurization, chilling, and freezing to aseptic packaging, non-thermal food processing, and the use of biosensors. Highlights Include Case study on the effect of blanching conditions on sulforaphane content in purple and roman cauliflower (brassica oleracea l. Var. Botrytis) Principles of thermal processing described along with thermal process calculations Case study on microwave preservation of fruit-based products: application to kiwifruit puree Principles and applications of Ohmic heating Advances in food additives and contaminants Use of edible films and coatings in fresh fruits and vegetables preservation The book provides information regarding the common food preservation methods such as blanching, thermal processing of foods, canning, extrusion-cooking, drying or dehydration of foods, chilling, and freezing. It also describes the principles and applications of new thermal and non-thermal food processing technologies, i.e., microwave heating, ohmic heating, high pressure (HP) processing, pulsed electric field (PEF) processing, magnetic fields, ultrasound, use of edible films and coatings, food packaging-aseptic packaging, and modified atmosphere, biosensor and ozone applications. The book helps you keep up with diverse consumer demands and rapidly developing markets.

Over the past decade, new applications of genetic engineering in the fermentation of food products have received a great deal of coverage in scientific literature. While many books focus solely on recent developments, this reference book highlights these developments and provides detailed background and manufacturing information.Co-Edited by Fidel

This book is an invaluable introduction to the physical properties of foods and the physics involved in food processing. It provides descriptions and data that are needed for selecting the most appropriate equipment in food technology and for making food processing calculations.

This timely reference utilizes simplified computer strategies to analyze, develop, and optimize industrial food processes and offers procedures to assess various operating conditions, engineering and economic relationships, and the physical and transport properties of foods for the design of the most efficient food manufacturing technologies and eq

Food manufacturing has evolved over the centuries from kitchen industries to modern, sophisticated production operations. A typical food factory includes the food processing and packaging lines, the buildings and exterior landscaping, and the utility-supply and waste-treatment facilities. As a single individual is unlikely to possess all the necessary skills required to facilitate the design, the task will undoubtedly be undertaken by an interdisciplinary team employing a holistic approach based on a knowledge of the natural and biological sciences, most engineering disciplines, and relevant legislation. In addition, every successful project requires a competent project manager to ensure that all tasks are completed on time and within budget. This Handbook attempts to compress comprehensive, up-to-date coverage of these areas into a single volume. It is hoped that it will prove to be of value across the food-manufacturing community. The multi-disciplinary nature of the subject matter should facilitate more informed communication between individual specialists on the team. It should also provide useful background

information on food factory design for a wider range of professionals with a more peripheral interest in the subject: for example, process plant suppliers, contractors, HSE specialists, retailers, consultants, and financial institutions. Finally, it is hoped that it will also prove to be a valuable reference for students and instructors in the areas of food technology, chemical engineering, and mechanical engineering, in particular.

Spray drying is a mechanical process by which materials in liquid form can be converted into solid form such as powders. It is a rapid, continuous, cost-effective, reproducible and scalable process for producing dry powders from a fluid material by atomization through an atomizer into a hot drying gas medium, usually air. The Handbook on Spray Drying Applications for Food Industries deals with recent techniques adopted in spray drying systems for drying a vast array of food products, novel and emerging tools used for spray drying of antioxidant rich products, optimized conditions used for extraction and production of herbal powders by using spray drying techniques, and problems encountered during spray drying of acid and sugar rich foods and also various herbal powders. The book discusses the encapsulation of flavors by using the spray drying process providing a comparison with other encapsulation techniques. It reviews the retention of bioactive compounds and the effect of different parameters on bioactive compounds during spray drying of juice. Moreover, the book explains the effect of novel approaches of spray drying on nutrients. The book addresses strategies adopted for retention of nutrients and survival of probiotic bacteria during spray drying processing. It also identifies packaging material needed for enhanced product stability. The safety and quality aspects of manufacturing spray dried food products are discussed. Key Features: Describes the design of high performance spray drying systems Highlights the strategy adopted for maximizing the yield potential of various spray dried food products Discusses strategies adopted for retention of nutrients and survival of probiotic bacteria during spray drying process Contains charts, procedure flow sheets, tables, figures, photos, and a list of spray drying equipment suppliers This book will benefit entrepreneurs, food scientists, academicians and students by providing in-depth knowledge about spray drying of foods for quality retention and also for efficient consumer acceptability of finished products.

The second edition of the Food Processing Handbook presents a comprehensive review of technologies, procedures and innovations in food processing, stressing topics vital to the food industry today and pinpointing the trends in future research and development. Focusing on the technology involved, this handbook describes the principles and the equipment used as well as the changes - physical, chemical, microbiological and organoleptic - that occur during food preservation. In so doing, the text covers in detail such techniques as post-harvest handling, thermal processing, evaporation and dehydration, freezing, irradiation, high-pressure processing, emerging technologies and packaging. Separation and conversion operations widely used in the food industry are also covered as are the processes of baking, extrusion and frying. In addition, it addresses current concerns about the safety of processed foods (including HACCP systems, traceability and hygienic design of plant) and control of food processes, as well as the impact of processing on the environment, water and waste treatment, lean manufacturing and the roles of nanotechnology and fermentation in food processing. This two-volume set is a must-have for scientists and engineers involved in food manufacture, research and development in both industry and academia, as well as students of food-related topics at undergraduate and postgraduate levels. From Reviews on the First Edition: "This work should become a standard text for students of food technology, and is worthy of a place on the bookshelf of anybody involved in the production of foods." Journal of Dairy Technology, August 2008 "This work will serve well as an excellent course resource or reference as it has well-written explanations for those new to the field and detailed equations for those needing greater depth." CHOICE, September 2006 Engineering Principles of Unit Operations in Food Processing, volume 1 in the Woodhead Publishing Series, In Unit Operations and Processing Equipment in the Food Industry series, presents basic principles of food engineering with an emphasis on unit operations, such as heat transfer, mass transfer and fluid mechanics. Brings new opportunities in the optimization of food processing operations Thoroughly explores applications of food engineering to food processes Focuses on unit operations from an engineering viewpoint

Sanitation in Food Processing is a guide to food process sanitation, which illustrates the principles with timely examples. It discusses the importance of training in food-plant sanitation programs, as well as regulatory programs relating to all aspects of food plant sanitation, including Hazard Analysis Critical Control Point (HACCP), the construction and design of food plants, and prevention of food-borne diseases. Comprised of 19 chapters, this volume begins with an overview of sanitation in food processing, good sanitation practices, and the ways to establish a successful food sanitation program. It then discusses factors to consider in the design and construction of food plants; sanitary design and operation of food processing and service equipment; microbial growth in foods; the importance of personal hygiene; and significant insects in the food industry. The reader is also introduced to ways of controlling insects, rodents, and birds in the food environment, while other chapters address sanitation in food packaging, storage, and transport. The book concludes with a summary of food laws and regulations. This book is a valuable resource for undergraduate and postgraduate students, food sanitarians, and others in the food-processing industry who want to learn more about the ways and means of ensuring the quality and safety of the food we eat.

Food engineering has become increasingly important in the food industry over the years, as food engineers play a key role in developing new food products and improved manufacturing processes. While other textbooks have covered some aspects of this emerging field, this is the first applications-oriented handbook to cover food engineering processes and manufacturing techniques. A major portion of Handbook of Food Engineering Practice is devoted to defining and explaining essential food operations such as pumping systems, food preservation, and sterilization, as well as freezing and drying. Membranes and evaporator systems and packaging materials and their properties are examined as well. The handbook provides information on how to design accelerated storage studies and determine the temperature tolerance of foods, both of which are important in predicting shelf life. The book also examines the importance of physical and rheological properties of foods, with a special look at the rheology of dough and the design of processing systems for the manufacture of dough. The final third of the book provides useful supporting material that applies to all of the previously discussed unit operations, including cost/profit analysis methods, simulation procedures, sanitary guidelines, and process controller design. The book also includes a survey of food chemistry, a critical area of science for food engineers.

The Handbook of Food Products Manufacturing is a definitive master reference, providing an overview of food manufacturing in general, and then covering the processing and manufacturing of more than 100 of the most common food products. With editors and contributors from 24 countries in North America, Europe, and Asia, this guide provides international expertise and a truly

global perspective on food manufacturing.

Food Processing: Principles and Applications is a comprehensive resource that explores the basic and applied aspects of food processing. It describes the physical, chemical, and microbiological basis for each method of preservation. Particular emphasis is placed on the application of three of the most universally used commercial processes: thermal processing, freezing, and dehydration. Thermal processing – perhaps the most widely used technology in the world – is examined in thorough discussions of the microbial basis of the process and on microbial destruction kinetics. Also described is the characterization of the heating behavior of foods and the equipment used for thermal processing. Low temperature preservation is also demonstrated with a focus on freezing. The fundamentals of the freezing process, and the techniques and equipment used in commercial freezing operations are also explained. The thermophysical properties and the modeling of freeze times are meticulously addressed in sequence. Aspects of dehydration are detailed from drying fundamentals to drying equipment, modeling, and storage stability. In the final section, separation processes are highlighted: evaporation, membrane processing, freeze concentration, extraction, and osmotic dehydration. This book is ideal for undergraduate students in food science who are taking courses in food processing. It is also a must have resource for food process engineers and researchers to forecast results of food processing methods.

This handbook comprehensively presents the current status of the manufacturing of the most important meat products. Editor and renowned meat expert Fidel Toldrá heads an international collection of meat scientists who have contributed to this essential reference book. Coverage is divided into three parts. Part one, Technologies, begins with discussions on meat chemistry, biochemistry and quality and then provides background information on main technologies involved in the processing of meat, such as freezing, cooking, smoking, fermentation, emulsification, drying and curing. Also included are key chapters on packaging, spoilage prevention and plant cleaning and sanitation. Part two, Products, is focused on the description of the manufacture of the most important products, including cooked and dry-cured hams, cooked and fermented sausages, bacon, canned meat, paté, restructured meats and functional meat products. Each chapter addresses raw materials, ingredients and additives, processing technology, main types of products, production data, particular characteristics and sensory aspects, and future trends. Part three, Controls, offers current approaches for the control of the quality and safety of manufactured meat products, with coverage including sensory evaluation; chemical and biological hazards including GMOs; HACCP; and quality assurance. This book is an invaluable resource for all meat scientists, meat processors, R&D professionals and product developers. Key features: Unparalleled international expertise of editor and contributing authors Addresses the state of the art of manufacturing the most important meat products Special focus on approaches to control the safety and quality of processed meats Extensive coverage of production technologies, sanitation, packaging and sensory evaluation

The processing of food is no longer simple or straightforward, but is now a highly inter-disciplinary science. A number of new techniques have developed to extend shelf-life, minimize risk, protect the environment, and improve functional, sensory, and nutritional properties. The ever-increasing number of food products and preservation techniques cr

Authored by world experts, the Handbook of Food Processing, Two-Volume Set discusses the basic principles and applications of major commercial food processing technologies. The handbook discusses food preservation processes, including blanching, pasteurization, chilling, freezing, aseptic packaging, and non-thermal food processing. It describes com

Advances in Biotechnology for Food Industry, Volume Fourteen in the Handbook of Food Bioengineering series, provides recent insight into how biotechnology impacts the global food industry and describes how food needs are diverse, requiring the development of innovative biotechnological processes to ensure efficient food production worldwide. Many approaches were developed over the last 10 years to allow faster, easier production of widely used foods, food components and therapeutic food ingredients. This volume shows how biotechnological processes increase production and quality of food products, including the development of anti-biofilm materials to decrease microbial colonization in bioreactors and food processing facilities.

Presents basic to advanced technological applications in food biotechnology Includes various scientific techniques used to produce specific desired traits in plants, animals and microorganisms Provides scientific advances in food processing and their impact on the environment, human health and food safety Discusses the development of controlled co-cultivations for reproducible results in fermentation processes in food biotechnology

The processing of food is no longer simple or straightforward, but is now a highly inter-disciplinary science. A number of new techniques have developed to extend shelf-life, minimize risk, protect the environment, and improve functional, sensory, and nutritional properties. Since 1999 when the first edition of this book was published, it has facilitated readers' understanding of the methods, technology, and science involved in the manipulation of conventional and newer sophisticated food preservation methods. The Third Edition of the Handbook of Food Preservation provides a basic background in postharvest technology for foods of plant and animal origin, presenting preservation technology of minimally processed foods and hurdle technology or combined methods of preservation. Each chapter compiles the mode of food preservation, basic terminologies, and sequential steps of treatments, including types of equipment required. In addition, chapters present how preservation method affects the products, reaction kinetics and selected prediction models related to food stability, what conditions need be applied for best quality and safety, and applications of these preservation methods in different food products. This book emphasizes practical, cost-effective, and safe strategies for implementing preservation techniques for wide varieties of food products. Features: Includes extensive overview on the postharvest handling and treatments for foods of plants and animal origin Describes comprehensive preservation methods using chemicals and microbes, such as fermentation, antimicrobials, antioxidants, pH-lowering, and nitrite Explains comprehensive preservation by controlling of water, structure and atmosphere, such as water activity, glass transition, state diagram, drying, smoking, edible coating, encapsulation and controlled release Describes preservation methods using conventional heat and other forms of energy, such as microwave, ultrasound, ohmic heating, light, irradiation, pulsed electric field, high pressure, and magnetic field Revised, updated, and expanded with 18 new chapters, the Handbook of Food Preservation, Third Edition, remains the definitive resource on food preservation and is useful for practicing industrial and academic food scientists, technologists, and engineers.

Developments such as the demand for minimally-processed foods have placed a renewed emphasis on good hygienic practices in the food industry. As a result there has been a wealth of new research in this area. Complementing Woodhead's best-selling Hygiene in the food industry, which reviews current best practice in hygienic design and operation, Handbook of hygiene

control in the food industry provides a comprehensive summary of the key trends and issues in food hygiene research. Developments go fast: results of the R&D meanwhile have been applied or are being implemented as this book goes to print. Part one reviews research on the range of contamination risks faced by food processors. Building on this foundation, Part two discusses current trends in the design both of buildings and types of food processing equipment, from heating and packaging equipment to valves, pipes and sensors. Key issues in effective hygiene management are then covered in part three, from risk analysis, good manufacturing practice and standard operating procedures (SOPs) to improving cleaning and decontamination techniques. The final part of the book reviews developments in ways of monitoring the effectiveness of hygiene operations, from testing surface cleanability to sampling techniques and hygiene auditing. Like Hygiene in the food industry, this book is a standard reference for the food industry in ensuring the highest standards of hygiene in food production. Standard reference on high hygiene standards for the food industry Provides a comprehensive summary of the key trends in food hygiene research Effective hygiene management strategies are explored This text covers the design of food processing equipment based on key unit operations, such as heating, cooling, and drying. In addition, mechanical processing operations such as separations, transport, storage, and packaging of food materials, as well as an introduction to food processes and food processing plants are discussed. Handbook of Food Processing Equipment is an essential reference for food engineers and food technologists working in the food process industries, as well as for designers of process plants. The book also serves as a basic reference for food process engineering students. The chapters cover engineering and economic issues for all important steps in food processing. This research is based on the physical properties of food, the analytical expressions of transport phenomena, and the description of typical equipment used in food processing. Illustrations that explain the structure and operation of industrial food processing equipment are presented. style="font-size: 13.3333330154419px;">The materials of construction and fabrication of food processing equipment are covered here, as well as the selection of the appropriate equipment for various food processing operations. Mechanical processing equipment such as size reduction, size enlargement, homogenization, and mixing are discussed. Mechanical separations equipment such as filters, centrifuges, presses, and solids/air systems, plus equipment for industrial food processing such as heat transfer, evaporation, dehydration, refrigeration, freezing, thermal processing, and dehydration, are presented. Equipment for novel food processes such as high pressure processing, are discussed. The appendices include conversion of units, selected thermophysical properties, plant utilities, and an extensive list of manufacturers and suppliers of food equipment.

Hui, a technology consultant, presents material on frozen food science, technology, and engineering, describing the manufacture, processing, inspection, and safety of frozen foods. He outlines basic procedures for optimizing the quality and texture of frozen foods and includes and tables and examples that illustrate the effects of various chemical and biochemical reactions on the quality of frozen food. The book details methods for selecting the most appropriate packaging materials for frozen foods, and provides guidelines on ensuring product safety.

Recent publications in food engineering concern mainly food process engineering, which is related to chemical engineering, and deals primarily with unit operations and unit processes, as applied to the wide variety of food processing operations. Relatively less attention is paid to the design and operation of food processing equipment, which is necessary to carry out all of the food processes in the food plant. Significant technical advances on processing equipment have been made by the manufacturers, as evidenced by the efficient modern food processing plants. There is a need to relate advances in process engineering to process equipment, and vice versa. This book is an attempt to apply the established principles of transport phenomena and unit operations to the design, selection, and operation of food processing equipment. Since food processing equipment is still designed empirically, due to the complexity of the processes and the uncertainty of food properties, description of some typical industrial units is necessary to understand the operating characteristics. Approximate values and data are used for illustrative purposes, since there is an understandable lack of published industrial data.

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. Handbook of Food Process Design is a major new 2-volume work aimed at food engineers and the wider food industry. Comprising 46 original chapters written by a host of leading international food scientists, engineers, academics and systems specialists, the book has been developed to be the most comprehensive guide to food process design ever published. Starting from first principles, the book provides a complete account of food process designs, including heating and cooling, pasteurization, sterilization, refrigeration, drying, crystallization, extrusion, and separation. Mechanical operations including mixing, agitation, size reduction, extraction and leaching processes are fully documented. Novel process designs such as irradiation, high-pressure processing, ultrasound, ohmic heating and pulsed UV-light are also presented. Food packaging processes are considered, and chapters on food quality, safety and commercial imperatives portray the role process design in the broader context of food production and consumption.

Handbook of Vegetables and Vegetable Processing, Second Edition is the most comprehensive guide on vegetable technology for processors, producers, and users of vegetables in food manufacturing. This complete handbook contains 42 chapters across two volumes, contributed by field experts from across the world. It provides contemporary information that brings together current knowledge and practices in the value-chain of vegetables from production through consumption. The book is unique in the sense that it includes coverage of production and postharvest technologies, innovative processing technologies, packaging, and quality management. Handbook of Vegetables and Vegetable Processing, Second Edition covers recent developments in the areas of vegetable breeding and production, postharvest physiology and storage, packaging and shelf life extension, and traditional and novel processing technologies (high-pressure processing, pulse-electric field, membrane separation, and ohmic heating). It also offers in-depth coverage of processing, packaging, and the nutritional quality of vegetables as well as information on a broader spectrum of vegetable production and processing science and technology. Coverage includes biology and classification, physiology, biochemistry, flavor and sensory properties, microbial safety and HACCP principles, nutrient and bioactive properties In-depth descriptions of key processes including, minimal processing, freezing, pasteurization and aseptic processing, fermentation, drying, packaging, and application of new technologies Entire chapters devoted to important aspects of over 20 major commercial vegetables including avocado, table olives, and textured vegetable proteins This important book will appeal to anyone studying or involved in food technology, food science, food packaging, applied nutrition, biosystems and agricultural engineering, biotechnology, horticulture, food biochemistry, plant biology, and postharvest physiology.

Packed with case studies and problem calculations, Handbook of Food Processing: Food Safety, Quality, and Manufacturing Processes presents the information necessary to design food processing

operations and describes the equipment needed to carry them out in detail. It covers the most common and new food manufacturing processes while addressing relevant Food Process Engineering and Technology, Third Edition combines scientific depth with practical usefulness, creating a tool for graduate students and practicing food engineers, technologists and researchers looking for the latest information on transformation and preservation processes and process control and plant hygiene topics. This fully updated edition provides recent research and developments in the area, features sections on elements of food plant design, an introductory section on the elements of classical fluid mechanics, a section on non-thermal processes, and recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail. Provides a strong emphasis on the relationship between engineering and product quality/safety Considers cost and environmental factors Presents a fully updated, adequate review of recent research and developments in the area Includes a new, full chapter on elements of food plant design Covers recent technologies, such as freeze concentration, osmotic dehydration, and active packaging that are discussed in detail

A high standard of hygiene is a prerequisite for safe food production, and the foundation on which HACCP and other safety management systems depend. Edited and written by some of the world's leading experts in the field, and drawing on the work of the prestigious European Hygienic Engineering and Design Group (EHEDG), Hygiene in food processing provides an authoritative and comprehensive review of good hygiene practice for the food industry. Part one looks at the regulatory context, with chapters on the international context, regulation in the EU and the USA. Part two looks at the key issue of hygienic design. After an introductory chapter on sources of contamination, there are chapters on plant design and control of airborne contamination. These are followed by a sequence of chapters on hygienic equipment design, including construction materials, piping systems, designing for cleaning in place and methods for verifying and certifying hygienic design. Part three then reviews good hygiene practices, including cleaning and disinfection, personal hygiene and the management of foreign bodies and insect pests. Drawing on a wealth of international experience and expertise, Hygiene in food processing is a standard work for the food industry in ensuring safe food production. An authoritative and comprehensive review of good hygiene practice for the food industry Draws on the work of the prestigious European Hygienic Engineering and Design Group (EHEDG) Written and edited by world renowned experts in the field

Effective water and energy use in food processing is essential, not least for legislative compliance and cost reduction. This major volume reviews techniques for improvements in the efficiency of water and energy use as well as wastewater treatment in the food industry. Opening chapters provide an overview of key drivers for better management. Part two is concerned with assessing water and energy consumption and designing strategies for their reduction. These include auditing energy and water use, and modelling and optimisation tools for water minimisation. Part three reviews good housekeeping procedures, measurement and process control, and monitoring and intelligent support systems. Part four discusses methods to minimise energy consumption. Chapters focus on improvements in specific processes such as refrigeration, drying and heat recovery. Part five discusses water reuse and wastewater treatment in the food industry. Chapters cover water recycling, disinfection techniques, aerobic and anaerobic systems for treatment of wastewater. The final section concentrates on particular industry sectors including fresh meat and poultry, cereals, sugar, soft drinks, brewing and winemaking. With its distinguished editors and international team of contributors, Handbook of water and energy management in food processing is a standard reference for the food industry. Provides an overview of key drivers for better management Reviews techniques for improvements in efficiency of water and energy use and waste water treatment Examines house keeping procedures and measurement and process control

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