parameters of the sugar manufacturing process and by-processes; characteristics of the equipment and control systems; completeness and accuracy of the energy monitoring systems. The book consists essentially of three parts. In Chapters 1 to 3, some theoretical background is given and engineering principles for creating efficient energy conversion and utilization subsystems in sugar factories are reviewed. The second part - Chapters 4 to 7 - discusses recent developments in these areas and their importance to energy conversion and utilization in sugar factories. The presentation is illustrated with suitable practically-oriented examples based mostly on the author's experience gained from nine years working with an engineering company specializing in the design, erection and modernization of sugar factories, as well as five years of consulting and research for the sugar industry. Short examples are presented in Chapters 1 to 3 and full-length in the third part of the book. Between them and summarized in a collection of real-life design analyses of energy subsystems of sugar factories, characterized by different levels of sophistication of the energy economy. The book thus provides a systematic review which will be helpful to managers and technologists in sugar factories where the problem may arise of choosing the most appropriate set of measures that best fit the factory’s unique needs. It can also be used in university-level courses on the energy economy of sugar factories, and will be of interest to design engineers and specialists engaged in research in the area. The book is thoroughly and detailed. The Carbon Footprint Handbook encompasses all areas of carbon footprint, including the scientific elements, methodological and technological aspects, standards, industrial case studies, and communications of carbon footprint results. Written and edited by an international group of experts, the far-ranging topics on carbon footprinting are divided into three sections comprising chapters focused on methodology, modeling, and case studies. The concepts of carbon footprint and climate change are no longer new to the world. As a result, there is increasing interest in quantifying and reducing the carbon footprint around the world, from industrial to individual levels. This book describes modeling aspects and calculations of carbon footprint in organizations and production. It emphasizes the importance of locating non-polluting energy sources as well as sustainability. The book also provides case studies offering a wealth of information on practices and methods in detecting and addressing carbon footprint. The Carbon Footprint Handbook is an important reference that discusses, in depth, the essential details of carbon footprint assessment. It uses research and case studies to methods and practices from locations around the world, including China, India, Spain, and Latin America. It demonstrates that the problems of carbon footprint are indeed worldwide while showing how they can be addressed in myriad areas of life, from industrial to personal action. Handbook of Cane Sugar Engineering focuses on the technologies, methodologies, and processes involved in cane sugar engineering. The book first underscores the delivery, unloading, and handling of cane, cane carrier and knives, and trash iron separators. The test then examines crushers, shredders, combinations of cane preparators, and feeding of mills and conveying bagasse. The manuscript takes a look at roller grooving, pressures in milling, mill speeds and capacity, and mill settings. Topics include setting of feed and delivery openings and trash plate, factors influencing capacity, formula for capacity, fiber loading, tonnage records, linear speed and speed of rotation, sequence of speeds, hydraulic pressure, and types of roller grooving. The book then elaborates on electric and turbine mill drives, mill gear ratio, construction of mills, extraction, milling control, purification of juice filtration, evaporation, sugar boiling, and centrifugal separation. The handbook is a valuable resource for data and engineers involved in cane sugar engineering. The increasing importance of biomass as a renewable energy source has led to an acute need for reliable and detailed information on its assessment, consumption and supply. Responding to this need, and overcoming the lack of standardized measurement and accounting procedures, this best-selling handbook provides the reader with the skills to understand the biomass resource base, the tools to assess the resource, and explores the pros and cons of exploitation. This new edition has been fully updated and revised with new chapters on sustainability methodologies. Topics covered include assessment methods for woody and herbaceous biomass, biomass supply and consumption, land use change, remote sensing techniques, food security, sustainability and certification as well as vital policy issues. The book includes international case studies on techniques from measuring tree volume to transporting biomass, which help to illustrate step-by-step methods. Technical appendices offer a glossary of terms, energy units and other valuable resource data. The handbook dispenses with conventional inaccurate graphical methods used in kinematics of plane mechanisms, cams and balancing. Instead, general vector approach for both plane and space mechanisms have been presented. Undergraduates, graduates and practicing engineers will find this book to be of utmost use. Phase Transitions in Foods, Second Edition, assembles the most recent research and theories on the topic, describing the phase and state transitions that affect technological properties of biological materials occurring in food processing and storage. It covers the role of water as a plasticizer, the effect of transitions on mechanical and chemical changes, and the application of modeling in predicting stability rates of change. The volume presents methods for detecting changes in the physical state and various techniques used to analyze phase behavior of hydrolymphs and food components. It should become a valuable resource for anyone involved with food engineering, processing, storage, and quality, as well as those working on related properties of pharmaceuticals and other biopolymers. Contains descriptions of non-fat food solids as "biopolymers" which exhibit physical properties that are highly dependent on temperature, time, and water content. Details the effects of water on the state and stability of foods, includes information on changes occurring in state and physicochemical processes during processing and storage. The only book on phase and state transitions written specifically for the applications in food industry, product development, and research is in print for over a century, it is the definitive guide to cane sugar processing, treatment and analysis. This edition expands coverage of new developments during the past decade - specialty sugars, plant maintenance, automation, computer control systems and the latest in instrumental analysis for the sugar industry. 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, distillation, high pressure processing, engineering 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 hygiene 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 book 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 book 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 Volume 61, Part II of Science and Civilisation in China contains two separate works. The first, by Christian Daniels, is a comprehensive history of Chinese sugar cane technology from ancient times to the early twentieth century. The second, by Nicholas K. Marquand, is a history of forestry in China: Life Cycle Assessment of Bio-refineries. The sixth and last book in the series on biomass-biofineries discusses the unprecedented growth and development in the emerging concept of a global bio-based economy in which biomass-based biofineries have attained center stage for the production of fuels and chemicals. It is envisaged that by 2020 a majority of chemicals currently being produced through a chemical route will be produced via a bio-based route. A bio-industrial residues, municipal solid waste, and paper waste have been considered the most significant feedstocks for such bio-refineries. However, for the techno-economic success of such biofineries, it is of prime and utmost importance to understand their lifecycle assessment for various aspects. Provides state-of-art information on the basics and fundamental principles of LCA for biofineries. Contains key features for the education and understanding of integrated biofineries. Presents models that are used to cope with land-use changes and their effects on biofineries. Includes relevant case studies that illustrate main points. A practical guide to everyone involved in the processing of sugar cane. Credited to essentials, the book is a compact and concise delineation of the unit processes in the manufacture of raw sugar from cane sugar, giving recommended procedures for achieving optimum results. Copyright code: 24529d87f50d6eadf7e70f198f7e5152