1. Record Nr. UNINA9910132162003321

Autore	Sadhukhan Jhuma
Titolo	Biorefineries and chemical processes : design, integration and sustainability analysis / / Jhuma Sadhukhan, Kok Siew Ng, Elias Martinez Hernandez
Pubbl/distr/stampa	Chichester, [England] : , : Wiley, , 2014 ©2014
ISBN	1-118-69816-9 1-118-69812-6 1-118-69813-4
Descrizione fisica	1 online resource (676 p.)
Classificazione	SCI013000
Disciplina	662/.88
Soggetti	Biomass - Refining Biomass chemicals - Technological innovations Biomass chemicals industry Biomass energy industries - Environmental aspects
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di bibliografia	Includes bibliographical references and index at the end of each chapters.
Nota di contenuto	Biorefineries and Chemical Processes; Contents; Preface; Part I: Introduction; Part II: Tools; Part III: Process Synthesis and Design; Part IV: Biorefinery Systems; Part V: Interacting Systems of Biorefineries (available on the companion website); Case Studies (available on the companion website); Acknowledgments; About the Authors; Companion Website; Nomenclature; Part I Introduction; 1 Introduction; 1.1 Fundamentals of the Biorefinery Concept; 1.1.1 Biorefinery Principles; 1.1.2 Biorefinery Types and Development; 1.2 Biorefinery Features and Nomenclature; 1.3 Biorefinery Feedstock: Biomass 1.3.1 Chemical Nature of Biorefinery Feedstocks1.3.2 Feedstock Characterization; 1.4 Processes and Platforms; 1.5 Biorefinery Products; 1.6 Optimization of Preprocessing and Fractionation for Bio Based Manufacturing; 1.6.1 Background of Lignin; 1.7 Electrochemistry Application in Biorefineries; 1.8 Introduction to Energy and Water Systems; 1.9 Evaluating Biorefinery Performances; 1.9.1 Performance

Indicators; 1.9.2 Life Cycle Analysis; 1.10 Chapters; 1.11 Summary; References; Part II Tools; 2 Economic Analysis; 2.1 Introduction; 2.2 General Economic Concepts and Terminology
2.2.1 Capital Cost and Battery Limits 2.2.2 Cost Index; 2.2.3 Economies of Scale; 2.2.4 Operating Cost; 2.2.5 Cash Flows; 2.2.6 Time Value of Money; 2.2.7 Discounted Cash Flow Analysis and Net Present Value; 2.2.8 Profitability Analysis; 2.2.9 Learning Effect; 2.3 Methodology; 2.3.1 Capital Cost Estimation; 2.3.2 Profitability Analysis; 2.4 Cost Estimation and Correlation; 2.4.1 Capital Cost; 2.4.2 Operating Cost; 2.5 Summary; 2.6 Exercises; References; 3 Heat Integration and Utility System Design; 3.1 Introduction; 3.2 Process Integration
3.3 Analysis of Heat Exchanger Network Using Pinch Technology3.3.1 Data Extraction; 3.3.2 Construction of Temperature-Enthalpy Profiles; 3.3.3 Application of the Graphical Approach for Energy Recovery; 3.4 Utility System; 3.4.1 Components in Utility System; 3.5 Conceptual Design of Heat Recovery System for Cogeneration; 3.5.1 Conventional Approach; 3.5.2 Heuristic Based Approach; 3.6 Summary; References; 4 Life Cycle Assessment; 4.1 Life Cycle Thinking; 4.2 Policy Context; 4.3 Life Cycle Assessment (LCA); 4.4 LCA: Goal and Scope Definition; 4.5 LCA: Inventory Analysis
4.6 LCA: Impact Assessment 4.6.1 Global Warming Potential; 4.6.2 Land Use; 4.6.3 Resource Use; 4.6.4 Ozone Layer Depletion; 4.6.5 Acidification Potential; 4.6.6 Photochemical Oxidant Creation Potential; 4.6.7 Aquatic Ecotoxicity; 4.6.8 Eutrophication Potential; 4.6.9 Biodiversity; 4.7 LCA: Interpretation; 4.7.1 Stand-Alone LCA; 4.7.2 Accounting LCA; 4.7.3 Change Oriented LCA; 4.7.4 Allocation Method; 4.8 LCIA Methods; 4.9 Future R&D Needs; References; 5 Data Uncertainty and Multicriteria Analyses; 5.1 Data Uncertainty Analysis; 5.1.1 Dominance Analysis; 5.1.2 Contribution Analysis
5.1.3 Scenario Analysis

Sommario/riassunto

"This book is for educators, postgraduate and final year undergraduate students in chemical engineering, environmental and biochemical engineering and applied science subjects, as well as researchers and practitioners in industry"--