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Nota di contenuto	Frontmatter -- Preface / Kruse, Olaf -- Contents -- 1 Introduction - Discovering Microalgae as Source for Sustainable Biomass -- The biological potential of microalgae -- 2 Phylogeny and systematics of microalgae: An overview / Friedl, Thomas / Rybalka, Nataliya / Kryvenda, Anastasiia -- 3 Balancing the conversion efficiency from photon to biomass / Wilhelm, Christian / Jakob, Torsten -- 4 Algae symbiosis with eukaryotic partners / Brück, Thomas / Garbe, Daniel -- 5 Genetic engineering, methods and targets / Kirchmayr, Anna / Griesbeck, Christoph -- 6 Algenics: Providing microalgal technologies for biological drugs / Cadoret, Jean-Paul / Lejeune, Alexandre / Michel, Rémy / Carlier, Aude -- Technical Means for Algae Production -- 7 Raceways-based production of algal crude oil / Chisti, Yusuf -- 8 Cellana LLC: Algae-based products for a sustainable future / Obbard, Jeff -- 9 Principles of photobioreactor design / Acién Fernández, F. G. / Fernández Sevilla, J. M. / Molina Grima, E. -- 10 Knowledge models for the engineering and optimization of photobioreactors / Pruvost, Jérémie / Cornet, Jean-François -- 11 Construction and assessment parameters of photobioreactors / Oeschger, Linda / Posten, Clemens -- 12 Autotrophic, industrial cultivation of photosynthetic microorganisms

using flue gas as carbon source and Subitec's flat-panel-airlift (FPA) cultivation system / Bergmann, Peter / Ripplinger, Peter / Beyer, Lars / Trösch, Walter -- 13 Case study: Microalgae production in the selfsupported ProviAPT vertical flat-panel photobioreactor system / Roef, Luc / Jacqmain, Michel / Michiels, Mark -- 14 Case study: Biomass from open ponds / Piek, Alexander -- 15 Case study: Spiral plate technology for totally dewatering algae alive / Brocken, Marco -- Index

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Sommario/riassunto

With the high interest in renewable resources, the field of algal biotechnology has undergone a huge leap in importance in recent years. The book treats the biological fundamentals of microalgal biotechnology in physiology and molecular biology and provides an overview of applications and products. It furthermore includes a survey of the state-of-the-art in process engineering of algae cultivation starting with mass production in open ponds and leading you to advanced technologies in closed photobioreactors. Thus crucial enabling technologies reaching from genetic manipulation to bioprocess engineering are reviewed. Contributions from academia and industrial case studies make this book a comprehensive survey of current progress in microalgae biotechnology. So this book will be of interest to active people in biology, biotechnology, and engineering in the area of sustainable production of high value products or mass production of food and fuel for the future.

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