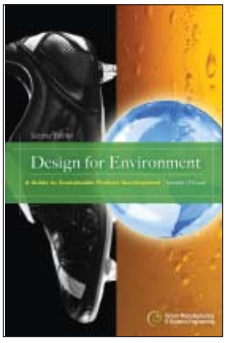
Books

Design For Environment: A Guide to Sustainable Development, 2nd Edition

Joseph Fiksel, McGraw-Hill, New York, NY, 432 pages, $125, June 2009, ISBN: 978-0-071-60556-4



Since the first edition of this book was published in 1996, issues related to climate change and natural resource degradation have come to the fore, and the drive toward sustainability has become *de rigueur*. Meanwhile, economic systems continue to generate wastes and emissions that are gradually threatening the ecological goods and services — energy, water, land, and biological resources — needed to enable prosperity and support Americans' current way of life.

Author Joseph Fiksel says that these environmental impacts should not be viewed simply (or worse, trivialized) as "issues" that can be corrected by making products "greener" and more "friendly." He proposes that environmental sustainability is not only compatible with economic growth, but that growth itself is a "natural" process — with the unacceptable alternative being stagnation and decline. The challenge, he says, is to work collectively to reinvent the supply chain systems and infrastructure that form the basis of production and consumption.

Design for environment (DFE) is presented as a key part of the sustainability engineering solution. The DFE concept involves integrating product processing and manufacturing, distribution, and disposal with factors such as environmental risk analysis, waste and pollution prevention, regulatory compliance, and business strategy — to address the environmental impacts of a product across its complete lifecycle.

This book provides a business rationale for developing sustainable products and processes, as well as a toolkit for corporations to practice DFE in the context of product lifecycle management. It also delves into the cultural, political, and economic challenges that are transforming the role of environmental management in the business world.

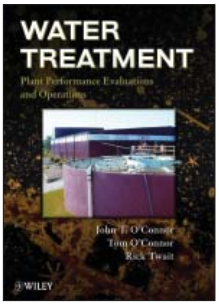
Fiksel illustrates the concept of eco-efficiency of products and processes, which quantifies how companies generate more value with less adverse environmental impact. As examples, the book describes how major companies across a range of industries have incorporated green design principles into the eco-innovation process.

The global economic collapse of 2008 demonstrated that environmental sustainability does not guarantee short-term resilience, as many leading companies stumbled. This book shows how DFE approaches are helping companies to recover from the downturn by adapting to the new realities of a resource-constrained and climate-conscious world.

The author says that DFE is no longer just a question of social responsibility; it is essential to the revitalization and continuity of the global economy. Unsustainable industrial patterns threaten to destabilize natural systems and may endanger the quality of life for future generations. "Fortunately," says Fiksel, "nature is extremely resilient, and living systems can adapt to change. If we are agile enough, then DFE can become a cornerstone of our own successful adaption strategy."

Water Treatment: Plant Performance Evaluations and Operations

John T. O'Connor, Tom O'Connor, and Rick Twait, John Wiley & Sons, Inc., Hoboken, NJ, 264 pages, $95, 2009, ISBN: 978-0-470-28861-0



Water treatment is a field of growing importance in North America, with many U.S. states, localities, and ten Canadian provinces requiring certification for water treatment plant operators. This book offers a step-by-step examination of the most current water treatment technologies — covering both theory and professional practice.

Documenting a twelve-year collaboration between the Bloomington (Illinois) Water Dept. and $H_2O'C$ Engineering, the book presents the details of a series of onsite studies to systematically evaluate and improve unit processes, operations, and procedures at the Bloomington Water Treatment Plant. The result is a set of guidelines that illustrate how water treatment plants might develop their own advanced analytic laboratory capabilities, assess treatment process performance, and improve their operations.

Through 26 case studies, the authors address issues including environmental regulations; particle and organism removal; testing, evaluating, and enhancing filter operations; managing seasonal taste and odor problems resulting from algal blooms; improving lime softening performance, efficiency, and operations; quantifying granular activated carbon (GAC) adsorption and microbial degradation of organic matter; and developing a comprehensive plant operations manual.

This book will teach readers how to use basic tools and internal resources to reduce costs, improve operational efficiencies, meet evolving regulatory requirements, update emergency procedures, and document standard operational procedures and experiences.