

Book review

MATERIALS AND THE ENVIRONMENT

Michael F. Ashby, Butterworth Heinemann, 2009, ISBN 978-1856176088, £37.99, 400 pp.

Materials and the environment is the latest addition to Michael Ashby's already impressive range of textbooks for students of design and engineering. It promises no less than a full integration of environmental aspects into the already tricky and complicated subject of material selection – and it delivers. In 12 concise, well-written chapters, the author moves from the starting point of materials dependence and resource consumption to eco-data, selection strategies and eco-informed materials selection, before zooming out once more to the bigger picture of sustainability and options for the future. Overall, the book is a fine achievement, allowing students to integrate environmental consciousness seamlessly with the more traditional aspects of materials selection, such as strength or cost.

There is a lot to learn here. Well-chosen and sometimes provocative case studies serve to underline the main elements of the text, which itself manages to be unusually informative yet always clear and pleasant to read. Data quality – a weakness of so many environmental studies – appears to be of a very high standard indeed; what's more, Ashby conveys to the reader a genuine understanding of where the inevitably large ranges in eco-data come from. For this feat alone, we should all be thankful. Keenly-chosen exercises serve to drive many points home, not just about the more tedious aspects of eco-number crunching, but also about 'greenwashing' and other less desirable aspects seen in environmental circles. Running the numbers in a well-structured and sensible way, Ashby tells us, is the key to distinguish real eco-design from the many imposters that populate the arena.

So, everything is bright and shiny? Well, not quite. There is some evidence of cutting corners, with brevity getting undue priority over a more nuanced approach. For example, one supposes that the many researchers working on the recycling of carbon fibre composites will take exception to Ashby's

designation of these materials as 'not recyclable' (p. 204), which could and should have been explored by one or two extra sentences. Similarly, the issue of part production, that is the actual shaping of materials, is underexposed, as in the comparison of steel and aluminium automotive bumpers (p. 142). Again, some additional words could have enlightened the readers – many of whom in all likelihood are design students for whom 'extrude' is not a real-world production process but an operation in their computer-aided design programs, and who would be well served with some understanding in this case.

These are relatively minor complaints, and most of them are casually dealt with already by Ashby through his inclusion of excellent 'further reading' sections. Even the focus on a purely technological approach towards sustainable development, apparent in the quote of what really is only half of its famous World Commission on Environment and Development (WCED) definition (p. 243), can be forgiven if one takes the valuable reference to Hardin's 'The tragedy of the commons' into account. Lest we not forget – nowhere does Ashby purport to have delivered more than a book on materials and the environment, and it is this clear focus that ultimately gives this book its strength.

This reviewer does not just recommend this book, but urges you to procure a copy, read it and use it, especially if you are involved in design education. Do not make the mistake of thinking that this book will do the teaching for you (no book can do that, not even one as good as this, but it will certainly inspire you to be a better teacher and make your teaching life easier in countless ways. As for all of you non-teachers out there, if there ever was a university textbook that will not disappoint you, it is this one. Truly, if eco-design is your field of expertise, then you can now get a reality check.

ERIK TEMPELMAN