

Preface

This book arose from my lectures on the subject of photovoltaics at the Münster University of Applied Sciences. The students repeatedly asked for a suitable textbook that I could recommend to them to accompany the lectures. Unfortunately searching the book market was difficult, although there are a whole series of books on the subject of photovoltaics. Many textbooks concentrate exclusively on cell technologies and look at this from a very theoretical, formalistic point of view. Added to this is that the contents are often out of date. On the other hand, there are books on the planning and design of photovoltaic installations. These can provide the solar plant installer with help but they simplify the issues so much that they do not provide a basis for a real understanding of photovoltaics.

For this reason this book places emphasis on a clear and also correct depiction of the physical and electro-technical fundamentals. Besides cell technologies, the system technology (inverter, plant types, etc.) as well as the planning and operation (selection of sites, monitoring of plants, etc.) are also discussed. A special feature is also the presentation of current methods of surveying and studying the quality of solar modules as is carried out in the photovoltaic test laboratory of the Münster University of Applied Sciences.

Special thanks are due to my students who have enriched the lectures on photovoltaics with great interest and commitment over the years. Their clever questions have entered this book so that the answers can also help the readers. I would also like to thank graduate engineer Josef Lindenbaum for fruitful technical discussions and his assistance in numerous surveys.

“Daddy, since you have been writing this book you haven’t any time for us.” I have heard this reproach now and again during the writing of this book. For this reason a special thank you to my wife Annette and my children Martin, Barbara and Viktoria who have always supported me during this time.

*Steinfurt, August 2011
Konrad Mertens*

Preface to the International Edition

A steadily growing number of requests for an English version led to the decision to publish this international version of the Photovoltaics textbook. For this – besides the translation of the German text – several figures, tables and solar radiation maps were extended with worldwide data and information. Moreover, as the photovoltaic market and technology has developed very quickly, numerous updates have found room in this first international version.

I would like to express my thanks to John Wiley & Sons, Ltd for making this book possible. My special thanks to Gunther Roth for the translation, Richard Davies for managing the whole book project and Laura Bell for taking care for all the small problems that arose.

A new English website has been created at www.textbook-pv.org.

Here the reader can find the most figures of the book (in colours!) as a free download, supporting software and solutions to the exercises (and possibly corrections to the book).

I am very glad that the book is now accessible for a worldwide readership. We all know that the transformation of the current worldwide energy system into an environmentally friendly and sustainable one is a giant challenge. Photovoltaics can become an important part in the future energy supply. Hopefully this book will help to deepen the understanding of the technology and the possibilities for photovoltaics, and can therefore support this development.

Steinfurt, January 2014
Konrad Mertens