

1. Record Nr.	UNINA9910633936703321
Autore	Komarnicki Przemyslaw
Titolo	Sector Coupling - Energy-Sustainable Economy of the Future : Fundamentals, Model and Planning Example of a General Energy System (GES) // by Przemyslaw Komarnicki, Michael Kranhold, Zbigniew A. Styczynski
Pubbl/distr/stampa	Wiesbaden : , : Springer Fachmedien Wiesbaden : , : Imprint : Springer, , 2023
ISBN	3-658-38111-6
Edizione	[1st ed. 2023.]
Descrizione fisica	1 online resource (221 pages)
Collana	Energy Series
Disciplina	621.319
Soggetti	Renewable energy sources Electric power distribution Energy policy Renewable Energy Energy Grids and Networks Energy System Transformation
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di bibliografia	Includes bibliographical references.
Nota di contenuto	Climate policy goals of sustainable energy supply -- Why do we need an overall energy system -- Energy consumption and CO2 emissions -- Sector coupling -- Paradigm shift caused by renewable generation -- Potentials of renewable generation -- Methodology and model construction for sector coupling -- Modeling of an overall energy system -- Hub model -- Temporal resolution of energy flows -- Substitution of energy yields -- Optimization of an overall energy system -- Energy use sectors and their energy consumption -- Energy supply and the role of hydrogen -- Net-Zero-Factory -- Electric mobility -- Optimization of an overall energy system. Optimization of an overall energy system -- Optimization of an overall energy system -- Energy use sectors and their energy consumption -- Energy supply as well as the role of hydrogen -- Net-Zero-Factory -- Electromobility -- Methodology of modelling the energy hub components -- Modelling of generation sectors -- Flexibility of an overall energy system -- Role

of information and communication technology -- Perspectives of the overall energy system.

Sommario/riassunto

Now that the energy turnaround has established itself at the beginning of this century as a buzzword but also as a trademark of the German way of generating energy from renewable sources, sector coupling can be understood as an extension of this idea to the entire economy. As far as the generation of electrical energy is concerned, the feasibility of a 100% renewable electrical energy system is now beyond doubt. It is therefore time to think about how the other sectors, apart from electricity, will function if 100% of energy is supplied as renewable electricity. Is that even possible? What other primary energy sources are needed, for example, to maintain the highly developed mobility of people or the industrial landscape? The content Climate Targets and Sustainable Energy Systems - Modelling the Energy Hub - Structure of Energy Consumption in Sectors - Storage Technologies and Systems - Sector Modelling - Flexibility Options and Digitalisation of the GES - International Perspective The target group - Students and lecturers from the fields of energy technology, energy systems engineering, electrical engineering and energy economics - Practitioners interested in a refresher course and career changers in the energy sector The authors As active contemporary witnesses, the authors have accompanied the energy transition in Germany and Europe for more than 20 years. In development, applied research and industrial application, they have investigated a wide range of topics in this field within the framework of numerous joint projects. Prof. Dr.-Ing. Przemyslaw Komarnicki is head of the Department of Energy Systems and Infrastructures (ESI) at the Fraunhofer Institute IFF in Magdeburg and professor of electrical power systems engineering at Magdeburg-Stendal University. Dipl.-Ing. Michael Kranhold is director of Customer Management and Grid Settlement Department at the transmission system operator 50Hertz Transmission GmbH in Berlin. He is a member of ETG and CIGRE. Univ. Prof. Dr. Zbigniew A. Styczynski was head of the Chair of Electrical Grids and Alternative Sources of Electrical Energy at Otto von Guericke University Magdeburg until April 2015. This book is a translation of an original German edition. The translation was done with the help of artificial intelligence (machine translation by the service DeepL.com). A subsequent human revision was done primarily in terms of content, so that the book will read stylistically differently from a conventional translation.