

Contents

1	An Overview of Energy Technologies for a Sustainable Future . . .	1
	Ayşe Nur Esen, Zehra Duzgit, A. Özgür Toy and M. Erdem Günay	
 Part I Energy Sources, Technologies and Environment		
2	Thermal Pollution Caused by Hydropower Plants	19
	Alaeddin Bobat	
3	Comparing Spatial Interpolation Methods for Mapping Meteorological Data in Turkey	33
	Merve Keskin, Ahmet Ozgur Dogru, Filiz Bektas Balcik, Cigdem Goksel, Necla Ulugtekin and Seval Sozen	
4	Energy Storage with Pumped Hydrostorage Systems Under Uncertainty	43
	Ahmet Yucekaya	
5	Telelab with Cloud Computing for Smart Grid Education	55
	Pankaj Kolhe and Berthold Bitzer	
6	A Decomposition Analysis of Energy-Related CO₂ Emissions: The Top 10 Emitting Countries	65
	Aylin Çiğdem Köne and Tayfun Büke	
7	Turkey's Electric Energy Needs: Sustainability Challenges and Opportunities.	79
	Washington J. Braida	

8	Shale Gas: A Solution to Turkey's Energy Hunger?	87
	Ilknur Yenidede Kozçaz	
9	Assessment of Adsorption Parameter Effectiveness for Radio-Selenium and Radio-Iodine Adsorption on Activated Carbon.	97
	A. Beril Tugrul, Nilgun Karatepe, Sevilay Hacıyakupoglu, Sema Erenturk, Nesrin Altinsoy, Nilgun Baydogan, Filiz Baytas, Bulent Buyuk and Ertugrul Demir	
10	Assessment of Sustainable Energy Development	109
	A. Beril Tugrul and Selahattin Cimen	
11	Geothermal Energy Sources and Geothermal Power Plant Technologies in Turkey	115
	Fusun Servin Tut Haklidir	
12	Structural Health Monitoring of Multi-MW-Scale Wind Turbines by Non-contact Optical Measurement Techniques: An Application on a 2.5-MW Wind Turbine	125
	Muammer Ozbek and Daniel J. Rixen	
13	Stability Control of Wind Turbines for Varying Operating Conditions Through Vibration Measurements	137
	Muammer Ozbek and Daniel J. Rixen	
 Part II Advanced Energy Materials		
14	Evaluation of HFO-1234YF as a Replacement for R134A in Frigorific Air Conditioning Systems.	151
	Mehmet Direk, Cuneyt Tunckal, Fikret Yuksel and Ozan Menlibar	
15	Biodiesel Production Using Double-Promoted Catalyst CaO/KI/γ-Al₂O₃ in Batch Reactor with Refluxed Methanol.	159
	Nyoman Puspa Asri, Bambang Pujojono, Diah Agustina Puspitasari, S. Suprpto and Achmad Roesyadi	
16	I-V Characterization of the Irradiated ZnO:Al Thin Film on P-Si Wafers By Reactor Neutrons.	171
	Emrah Gunaydin, Utku Canci Matur, Nilgun Baydogan, A. Beril Tugrul, Huseyin Cimenoglu and Serco Serkis Yesilkaya	

17 The Characteristic Behaviors of Solgel-Derived CIGS Thin Films Exposed to the Specific Environmental Conditions	179
Utku Canci Matur, Sengul Akyol, Nilgun Baydogan and Huseyin Cimenoglu	
18 Effect of Curing Time on Poly(methacrylate) Living Polymer	193
Tayfun Bel, Nilgun Baydogan and Huseyin Cimenoglu	
19 Effects of Production Parameters on Characteristic Properties of Cu(In,Ga)Se₂ Thin Film Derived by Solgel Process.	199
Sengul Akyol, Utku Canci Matur, Nilgun Baydogan and Huseyin Cimenoglu	
20 Production of Poly(Imide Siloxane) Block Copolymers	209
Turkan Dogan, Nilgun Baydogan and Nesrin Koken	
 Part III Energy Management, Economics and Policy	
21 Government Incentives and Supports for Renewable Energy	219
Münci Çakmak and Begüm İsbir	
22 Comparison of the Relationship Between CO₂, Energy USE, and GDP in G7 and Developing Countries: Is There Environmental Kuznets Curve for Those?	229
Mahdis Nabaee, G. Hamed Shakouri and Omid Tavakoli	
23 Identification and Analysis of Risks Associated with Gas Supply Security of Turkey	241
Umit Kilic and A. Beril Tugrul	
24 The Social Cost of Energy: External Cost Assessment for Turkey	253
Aylin Çiğdem Köne	
25 Energy Infrastructure Projects of Common Interest in the SEE, Turkey, and Eastern Mediterranean and Their Investment Challenges.	261
Panagiotis Kontakos and Virginia Zhelyazkova	
26 Incorporating the Effect of Time-of-Use Tariffs in the Extended Conservation Supply Curve	269
Aakash Jhaveri and Santanu Bandyopadhyay	

27	Management of Distribution System Protection with High Penetration of DGs	279
	Abdelsalam Elhaffar, Naser El-Naily and Khalil El-Arroudi	
28	Assessment of Total Operating Costs for a Geothermal District Heating System.	293
	Harun Gökgedik, Veysel İncili, Halit Arat and Ali Keçebaş	
29	How the Shadow Economy Affects Enterprises of Finance of Energy	305
	Aristidis Bitzenis, Ioannis Makedos and Panagiotis Kontakos	
30	Energy Profile of Siirt.	315
	Omer Sahin, Mustafa Pala, Asım Balbay, Fevzi Hansu and Hakan Ulker	

Energy Systems and Management

Bilge, A.N.; Toy, O.; Günay, M.E. (Eds.)

2015, X, 324 p. 135 illus., 108 illus. in color., Hardcover

ISBN: 978-3-319-16023-8