1.	Record Nr.	UNINA9911011777503321
	Autore	Basmadjian Robert
	Titolo	Demand-Side Energy and Power Management in Data Centers : Are Data Centers Modern Societies' Double-Edged Sword? / / by Robert Basmadjian
	Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2025
	ISBN	3-031-85956-1
	Edizione	[1st ed. 2025.]
	Descrizione fisica	1 online resource (252 pages)
	Collana	Lecture Notes in Energy, , 2195-1292 ; ; 1
	Disciplina	321.319
	Soggetti	Electric power distribution Electric power production Computers Energy Grids and Networks Electrical Power Engineering Computer Hardware
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Introduction -- Power and Smart Grid -- Flexibility of Data Centers for DSM -- Methodologies and Models for Predictions -- Reduction of Energy Consumption -- Minimization of Peak Power Demand -- Integration of Renewable Energy Sources -- Conclusion.
	Sommario/riassunto	This book explains the principles, foundations and methodologies adopted in data centers to achieve demand-side energy and peak power management. It gives a brief introduction about Smart Grid, how the transition from legacy to Smart Grid is realized, the different approaches for demand-side management (DSM), and then discusses the opportunities of data centers to achieve DSM and highlight the different considered optimization criterion. Data centers are the backbones in realizing digitization where they host ICT (information and communication technologies) resources like servers, storage devices and networking equipment. Despite their advantages in terms of providing numerous services to our modern society (e.g. social media, e-commerce, online learning), the major drawback is that data centers devour enormous amounts of energy. It is expected that the

energy usage of data centers will increase in the next few years - expected to reach almost 25% of the world's overall consumption - due to the emerging and expanding technologies such as Blockchain and 5G.