

1. Record Nr.	UNINA9911114290303321
Autore	Sarbu Ioan
Titolo	Advances in District Heating Systems and Integrating Renewables : Fundamentals, Experiments, and Applications / / by Ioan Sarbu, Alexandru Dorca
Pubbl/distr/stampa	Cham : , : Springer Nature Switzerland : , : Imprint : Springer, , 2026
ISBN	3-032-12784-X 9783032127846
Edizione	[1st ed. 2026.]
Descrizione fisica	1 online resource (641 pages)
Collana	Green Energy and Technology, , 1865-3537
Disciplina	621.042
Soggetti	Renewable energy sources Buildings - Environmental engineering Energy storage Electric power distribution Renewable Energy Building Physics, HVAC Mechanical and Thermal Energy Storage Energy Grids and Networks
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Nota di contenuto	Introduction -- Renewable energy sources -- Vapour compression heat pumps with electro-compressor -- District heating systems -- Modelling and optimisation of district heating networks -- Thermal energy storage -- Heat distribution systems in buildings -- Advanced applications of integrating renewable energy into local and district heating systems -- General conclusions and perspective.
Sommario/riassunto	This book offers comprehensive coverage of the modern energy challenge of integrating renewable energy sources into district heating (DH) systems. It presents a high level of scientific and technical detail, grounded in original research and a synthesis of consistent bibliographic material. The aim is to address the growing need for modernization and enhanced energy efficiency to significantly reduce CO emissions. This book includes physical and mathematical concepts

designed to make this publication a self-contained, up-to-date source of information for scientists, researchers, and engineers. It also provides promising directions for future research and innovation in sustainable thermal energy systems. This book features a wide range of content, including theoretical studies, numerical and optimization models, experimental case studies at both laboratory and in situ scales, and numerous practical applications. Key areas of emphasis include: Development, energy analysis, modeling, and optimization of DH systems. Valorization of renewable energy sources. Integration of heat pump technologies with renewables into DH systems. Analysis of thermal energy storage technologies and their potential integration into DH systems. Evaluation of the performance of various medium- and low-temperature heat distribution systems in buildings. Advanced applications of renewable energy integration into local and DH systems. Structured across nine pedagogically designed chapters, and enriched with illustrations, tables, and examples, this book serves as a thorough guide for researchers, engineers, lecturers, and graduate and Ph.D. students in the field of district heating engineering with integrated renewables.
