

1. Record Nr.	UNINA9910583339403321
Autore	DiPippo Ronald
Titolo	Geothermal power plants : principles, applications, case studies and environmental impact // Ronald DiPippo, Ph.D., Chancellor Professor Emeritus University of Massachusetts Dartmouth North Dartmouth, MA, USA
Pubbl/distr/stampa	Amsterdam, [Netherlands] : , : Butterworth-Heinemann, , 2016 ©2016
ISBN	0-08-100290-4
Edizione	[4th ed.]
Descrizione fisica	1 online resource (802 p.)
Disciplina	333.8
Soggetti	Geothermal power plants Geothermal resources Geothermal engineering
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Front Cover; Geothermal Power Plants; Copyright Page; Dedication; Contents; Foreword to the Fourth Edition; Preface and Acknowledgements to the Fourth Edition; What's New in the Fourth Edition?; A Few Observations; A Newcomer's Introduction to Geothermal Power Conversion; Acknowledgments; Preface and Acknowledgements to the Third Edition; Preface and Acknowledgements to the Second Edition; Preface and Acknowledgements to the First Edition; 1. Resource Identification and Development; 1 Geology of Geothermal Regions; 1.1 Introduction; 1.2 The Earth and its Atmosphere 1.3 Active Geothermal Regions 1.4 Model of a Hydrothermal Geothermal Resource; 1.5 Other Types of Geothermal Resources; 1.5.1 Hot Dry Rock; 1.5.2 Geopressure; 1.5.3 Magma Energy; 1.5.4 Deep Hydrothermal; 1.5.5 Low Temperature; References; Problems; 2 Exploration Strategies and Techniques; 2.1 Introduction; 2.2 Objectives of an Exploration Program; 2.3 Phases of an Exploration Program; 2.3.1 Literature Survey; 2.3.2 Airborne Survey; 2.3.3 Geologic Survey; 2.3.4 Hydrologic Survey; 2.3.5 Geochemical Survey; 2.3.6 Geophysical Survey; 2.4 Synthesis and Interpretation; 2.5 The Next Step: Drilling

References Problems; 3 Geothermal Well Drilling; 3.1 Introduction; 3.2 Site Preparation and Drilling Equipment; 3.3 Drilling Operations; 3.4 Safety Precautions; References; Problems; 4 Reservoir Engineering; 4.1 Introduction; 4.2 Reservoir and Well Flow; 4.2.1 Darcy's Law; 4.2.2 Reservoir-Well Model: Ideal Case; 4.2.3 Reservoir-Well Model: Basic Principles; 4.2.4 Liquid-Only Flow; 4.2.5 Location of the Flash Horizon; 4.2.6 Two-Phase Flow in the Well; 4.2.7 Complete Model: Reservoir to Wellhead with Wellbore Flashing; 4.3 Well Testing; 4.3.1 Desired Information  
 4.3.2 Pressure and Temperature Instrumentation 4.3.3 Direct Mass Flow Rate Measurements; 4.3.4 Indirect Mass Flow Rate Measurements; 4.3.5 Transient Pressure Measurements and Analysis; 4.4 Calcite Scaling in Well Casings; 4.5 Reservoir Modeling and Simulation; 4.5.1 Input; 4.5.2 Architecture; 4.5.3 Calibration and Validation; 4.5.4 History Matching; 4.5.5 Use of the Model; 4.5.6 Examples of Reservoir Simulators; 4.6 Reinjection; 4.6.1 Motivation; 4.6.2 Strategies; 4.6.3 Examples; References; Problems; 2. Geothermal Power Generating Systems; 5 Single-Flash Steam Power Plants; 5.1 Introduction  
 5.2 Gathering System Design Considerations 5.2.1 Piping Layouts; 5.2.2 Pressure Losses; 5.3 Energy Conversion System; 5.4 Thermodynamics of the Conversion Process; 5.4.1 Temperature-Entropy Process Diagram; 5.4.2 Flashing Process; 5.4.3 Separation Process; 5.4.4 Turbine Expansion Process; 5.4.5 Condensing Process; 5.4.6 Cooling Tower Process; 5.4.7 Utilization Efficiency; 5.5 Example: Single-Flash Optimization; 5.5.1 Choked Well Flow; 5.5.2 Non-Choked Well Flow; 5.6 Optimum Separator Temperature: An Approximate Formulation; 5.7 Environmental Aspects for Single-Flash Plants  
 5.7.1 General Considerations

---

Sommario/riassunto

Now in its 4th edition, this single resource covers all aspects of the utilization of geothermal energy for power generation using fundamental scientific and engineering principles. Its practical emphasis is enhanced by the use of global case studies from real plants and applications from around the world that increase your understanding of geothermal energy conversion and provide a unique compilation of hard-to-obtain data and experience. Technical, economic and business aspects presented in case studies provide current and up-and-coming geothermal developers and entrepreneurs with a solid understanding of opportunities and pitfalls. Geothermal Power Plants, 4th Edition, presents state-of-the-art geothermal developments and experience of real applications for professionals, and a comprehensive reference for theory and practice. Important new and revised content on double- and triple-flash steam power plants, plant and well pumps, and biomass-geothermal and solar-geothermal hybrid systems New chapters on global case studies with comprehensive and up-to-date statistics, including New Zealand, Indonesia, Central America and the Caribbean, and the state of Nevada, USA, plus updated chapters on Larderello (Italy), The Geysers (USA), Turkey and Enhanced Geothermal Systems (EGS) make this useable and relevant for a global audience Revised and additional practice problems with emphasis on system simulation using electronic equations of state for working fluid properties. SI units are now used exclusively

---