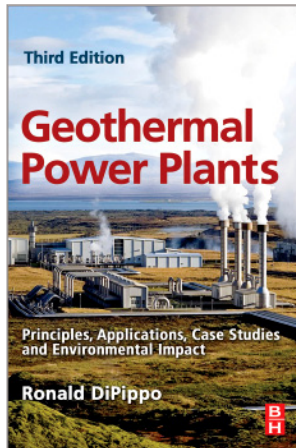


Geothermal Power Plants: Principles, Applications, Case Studies and Environmental Impact

A book review



By Ronald DiPippo

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[Geothermal Power Plants](#) is a highly detailed book that seeks to provide an explanation to both the underlying principles and the technical challenges of power generation from geothermal resources. Although it states it is intended for students, researchers, engineers and designers, it is heavily weighted towards the energy industry and practical applications, and does require significant background knowledge, particularly of the geophysical concepts involved in reservoir geology, and classical mechanics.

The book has been written by Ronald DiPippo, Chancellor Professor Emeritus of Mechanical Engineering at the University of Massachusetts and geothermal expert. His research into thermodynamics of high-temperature and pressure gases, his work as a geothermal consultant in nine different countries and his experience in mechanical engineering in both the public and private sectors make him the ideal author for a book of this nature.

The first chapter aims to familiarise the reader with the geology of geothermal zones, and it does this very well. The pace of the author's writing in this first part of the book is steady, making this chapter a pleasure to read. The links between fracking and geothermal energy, and between different types of geothermal energy and their environmental impact, are concisely discussed and are later expanded on in the final chapter.

In chapter two, the author explains the viability of any particular site as a geothermal resource and illustrates the various factors site viability is dependedn on by using bullet-pointed lists. This information could prove very useful to potential investors in the industry who desire to know the complexity behind a project's viability and the procedures that apply to the exploratory stage.

However, the knowledge level jumps dramatically once geochemical and geophysical techniques enter the picture, and again in chapter four, where reservoir geology is discussed. To aid understanding, the author provides extensive references and the appendices contain more information.

If you are unfamiliar with the general layout and operation of a power plant, chapter three provides a decent, easily readable description, but the book becomes quite a heavy onslaught of information from chapter five onwards. Given time, due to the amount of detail the book possesses, there is much information to be obtained here, however the task of doing so can be quite daunting. Once you start to see the structure of the book it becomes easier to digest, but this only became apparent to me on the second read-through.

Chapters 5–10 form Part Two of the volume, which details the different types of geothermal power plant possible. Chapter 11 onward forms Part Three, which is composed of case studies from various geothermal power plants across the world. I found that supplementing the power plant types with real examples to be very useful, and also enlightening, as there were many I did not know of (such as Turkey, which has three of the most highly efficient units in the world, and Russia's Kamchatka peninsula).

In all, this is a valuable book that could benefit from either becoming more accessible to the intended audience or from changing its focus to a purely engineering audience. I can see this book being very useful indeed for those actively working in the geothermal energy sector.

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