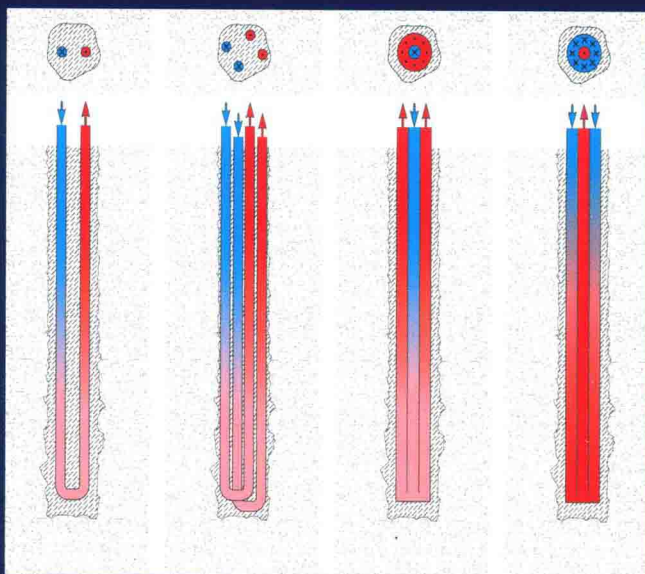


# Shallow Geothermal Systems – Recommendations on Design, Construction, Operation and Monitoring



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Of the Geothermal Energy Study Group at the specialist  
Hydrogeology Section of the German Geological  
Society (FH-DGGV) and the Engineering Geology  
Section of the German Geotechnical Society and the  
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## Preface

The use of shallow geothermal energy has increased enormously over the past ten years. As the number of geothermal energy installations has risen, so has the number of technical developments in the field. There have been cases of damage in connection with the construction and operation of geothermal energy systems which have attracted much attention in the media. In particular, the cases of damage that have become public show that drilling to depths of several hundred metres is a technical activity that calls for responsible procedures in the sense of quality-assured design, construction and operation of the systems. Avoiding damage caused by shallow geothermal energy installations is a top priority for sustainable geothermal energy uses, especially when bodies of groundwater have to be protected against adverse effects. The recommendations in this book should be regarded as contributions to the quality-assured realisation of such systems. One of the aims of the Geothermal Energy Study Group at the specialist Hydrogeology Section of the German Geological Society (DGGV) and the Engineering Geology Section of both the German Geotechnical Society (DGGT) and the DGGV is to promote the widespread use of geothermal energy as an environment-friendly energy source while prioritising the protection of bodies of water. The authors as well as the DGGV and the DGGT have conceived these recommendations as advice and not as a set of technical regulations in the sense of a standard. Therefore, the recommendations of the Geothermal Energy Study Group include a number of textbook-like passages and much information on the legislation that affects approvals and permits. At the time of going to print, the preparation of a standard for shallow geothermal energy was not in sight; such a standard is, however, still regarded as essential.

The authors and their assistants in the study group are hydrogeologists, engineering geologists and engineers from design consultants, the construction industry, the building materials industry, authorities and universities. They drew up the recommendations over a number of years and all were well aware of the fact that some of the content could certainly trigger controversy in technical circles.

In order to guarantee the technical quality of the recommendations of the Geothermal Energy Study Group, the content was subjected to a peer review process. Prof. Dr. Ingrid Stober (Freiburg Regional Authority), Prof. Dr. Rolf Bracke (International Geothermal Center, Bochum) and Prof. Dr. Dmitry V. Rudakov (National Mining University, Dnipropetrovsk) undertook this important and demanding task, approaching it from different perspectives.

Their remarks and comments were carefully considered in the preparation of this current edition of the recommendations.

Besides the peer review process, the publishers made the recommendations publicly available on the Internet for three months. Anybody who was interested was invited to submit their remarks, comments and suggestions for improvements within those three months. The authors read and evaluated every single contribution received, which resulted in many improvements being made to the text and illustrations. We are very grateful to all who made contributions to the work of the study group in this way.

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