

Use your entire geothermal potential

Deep geothermal energy
Project planning, exploration and plant construction with DMT





Opt for financial and technological process safety.

DMT understands the entire field of geothermal energy like no other. Exploration seismic technology is 100 years old, sophisticated and highly productive. Heating plants powered by deep geothermal energy have been constructed for 25 years. For Germany as a business location, it is now a question of sustainable and economic use of the eternal resource of geothermal energy. Until this goal is achieved nationwide, DMT will accompany companies and the industry, communities, cities and countries in the planning, discovery, evaluation and use of this energy of the future. Whatever phase your geothermal project is currently in, our specialists are on hand to provide consultation from the very first deliberations.

With state-of-the-art equipment and an interdisciplinary team with a high level of technical expertise, DMT is internationally active in the field of deep geothermal energy. With this experience, we can offer our clients a consistent range of services in all aspects of deep geothermal energy. And as a member of the TÜV NORD GROUP, we also offer the greatest possible investment and process security.

Before we even get started we'll take a look at the general conditions: Special features on site or opportunities and risks to be considered. If a profitability calculation is positive on this basis, the subsequent phases can be planned and implemented. Our funding management specialists ensure optimal financing at the outset, and we also ensure the necessary exchange of information with members of the public and the authorities right from the start. All individual engineering services are provided by a single responsible person, optimising the process right through to finished system construction in line with DMT's promise of performance. We call this engineering performance.

Your personal contact persons are also the responsible project managers:

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One call takes you from the feasibility study to the operational system.

1

Project preparation →

A number of questions need to be answered in detail in order to be able to assess whether a project for using geothermal energy is a viable option. It all starts with substantive basic research, analyses of the existing situation, potential, benefits and risks and economic viability, preliminary planning and clever subsidy management, to name just the essential factors.

2

Project management →

DMT provides support for all planning, geoscientific, drilling and construction services. This allows you to react flexibly to changing conditions which require quick responsiveness as well as adaptability within the framework of budget and scheduling. The integrated cooperation of all participants ensures that synergies are fully exploited. Economic efficiency and safety are always at the centre of attention.

3

Site investigation →

Detailed site investigation is the basis for further progress and one of our central business areas. Economically decisive advantages can often be achieved as early as the exploration stage. Precise planning, thorough exploration and interdisciplinary data evaluation and geological interpretation are the foundations for successful projects. Those who invest in expertise and quality early on will gain in efficiency and performance in the medium term.

4

Seismics →

Seismic structure exploration, which has proven itself in oil and gas exploration amongst other things, in combination with state-of-the-art computer-aided evaluation, finds the best location, optimises drilling planning and makes projects more successful and safer.

5

Data processing →

A significant step in the processing of 2D/3D seismic data is processing. You will receive optimal solutions and detailed results from DMT's experienced specialists.

6

Geological interpretation and modelling →

Wise interpretation and modelling of geological and geo-physical data is the secret of successful investments. In combination with state-of-the-art software, reliable results are delivered as a basis for decision-making for further project development.

7

Hydrogeology and reservoir simulation →

Detailed knowledge of the reservoir properties is essential in order to use a geothermal plant efficiently in the long term. Various utilisation scenarios can be simulated on the basis of geological modelling and thus insights gained into heat exchange, cooling behaviour or flow properties.

8

Plant engineering →

Seamless process progress is essential in making a geothermal project a success. This is especially true in the transition from exploration to drilling and further on from production to heating plant technology.

9

Drilling site, planning, monitoring →

A drilling site for injection and production wells requires precise technical planning. We offer detailed planning of all aspects of the drilling site, from structural analysis to construction supervision and ensuring all permits are obtained. Drilling planning is crucial for the successful sinking of deep boreholes. This involves optimising the drilling paths, selecting the suitable drilling rig, dimensioning the casing and much more.

10

Seismological monitoring →

Safety is the top priority in any geothermal project. Under the three keywords measurement, preservation of evidence and assessment, DMT offers a comprehensive range of services related to seismological monitoring, including measurement, assessment and expert reports.

11

Borehole measurements →

Wireline logging in geothermal wells is challenging due to high temperatures and unique lithologies. In particular, geological fault and fracture systems in the hydrothermal reservoir rocks play an important role in the planning and design of the equipment in the heating plant. This requires the necessary tools and know-how from true experts.

12

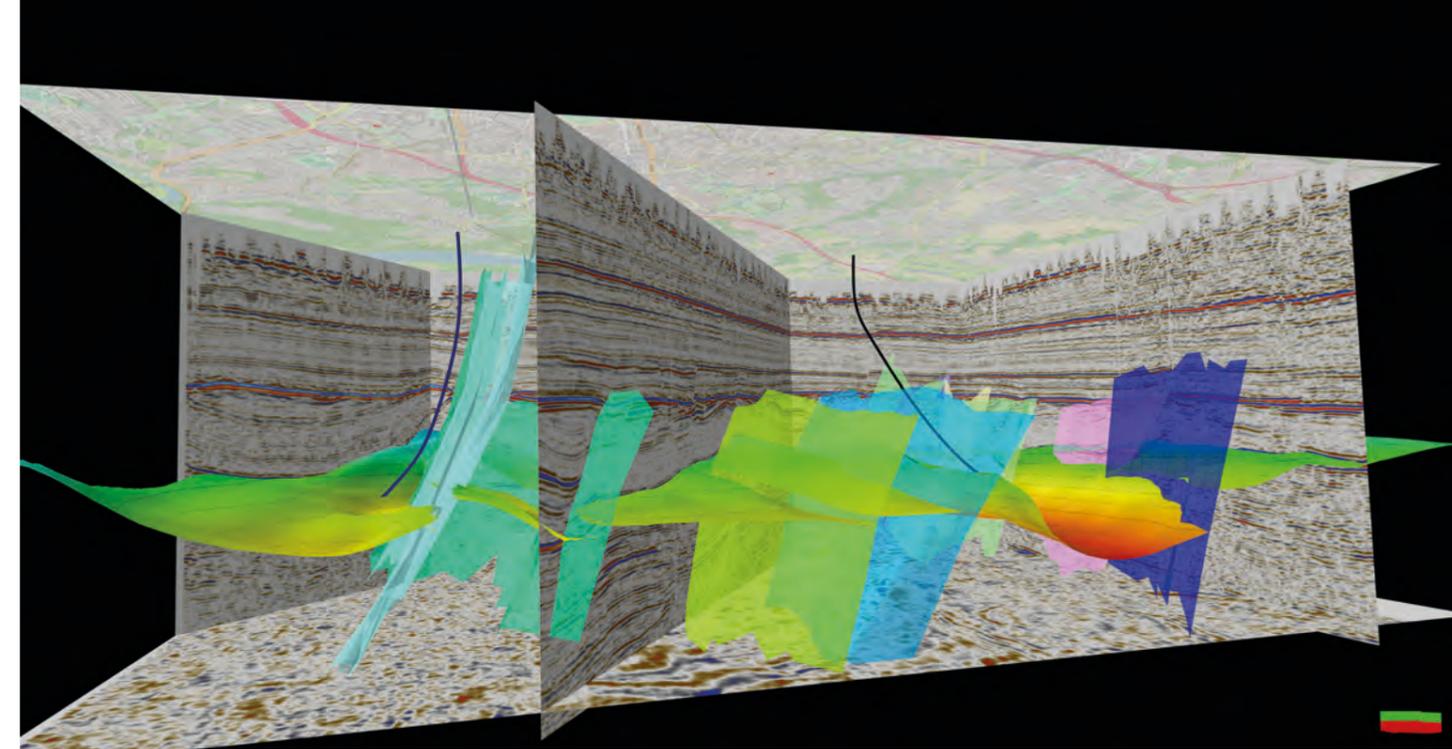
System planning and design

DMT also provides technical expertise in plant engineering. The organisation and obtaining of permits and licences is just as much a part of the service portfolio as plant planning, building and plant construction. DMT is a reliable partner for investors right up to the start of your deep geothermal heating plant.

An overview of the fine art of deep geothermal energy.

Geothermal energy successfully harnessed with DMT can be found worldwide, compacted in Europe, communally completed and concentrated on companies. Our geothermal references in our region include Stadtwerke München, Stadtwerke Germering, Stadt Wiesbaden, Geohardt GmbH, Süddeutsche Geothermieprojekte GmbH, GeoGlobal Energy Europe GmbH, GEO Geothermie Traunstein GmbH, E.ON Bayern Wärme GmbH, Roche Diagnostics GmbH and many more.

This list clearly shows the specific services you can expect from DMT, but every successful project has always started with a positive dialogue. We look forward to exchanging ideas with you.



Project planning On the way to the project launch		Site investigation Collect all relevant data and information				Plant engineering			
Feasibility Don't miss anything from the start	Project management Safe and successful planning with DMT	Seismics 'Seeing' into the underground	Data processing Converting data into information	Geological interpretation and modelling Understanding the underground in 3D	Hydrogeology and reservoir simulation Realistic simulation of heat extraction in the subsoil	Drilling site, drilling planning and monitoring Before going into the depths	Seismological monitoring Have induced seismicity on the 'radar'	Borehole measurements Determining important parameters for plant planning and design	System planning and design On the way to the first kilowatt-hour
<ul style="list-style-type: none"> Basic determination of regulations, location, technology, market Inventory analysis (at the municipal level and for neighbourhoods and/or individual buildings) Potential analysis (of all renewable energies), benefit and risk structure (at communal level and for districts and/or individual buildings), target picture and milestones heat transition strategies Profitability calculations Project structure planning follow-up phases Information and participation of the public and all relevant parties Press relations and social media Implementation planning and support for rehabilitation planning Funding management (BEW, KfW, KFKG and State regional funding programmes, e.g. progress.NRW) Workshops to create a comprehensive information base and a common understanding among all participants 	<ul style="list-style-type: none"> Construction project management <ul style="list-style-type: none"> Assessment of geological requirements Feasibility analyses Risk assessment Optimisation of work interfaces Design and implementation planning for all project phases Concept, budget and time planning <p>Coordination under planning law</p> <ul style="list-style-type: none"> Checks in accordance with standards and regulations Preparation of tender documents Checking of providers Support in contract negotiations and contract drafting <p>Drilling and construction supervision in addition to site management</p> <ul style="list-style-type: none"> Supervision of services and construction work Coordination of trades Tendering, awarding, deadline control, accounting Performance acceptance and quality assurance Contract and claim management Additional work processing 	<ul style="list-style-type: none"> Operational plan, environmental impact and species protection assessment, explosive ordnance detection Survey design study for optimal planning of a seismic survey (Pre)permitting, obtaining permits 2D, 3D, 4D reflection seismics (cable-connected and wireless) Refraction seismics (also for determining the static corrections/ weathering layer, "low velocity layer") Vibration seismics (also slip sweep), conventional excitation Shallow water seismics (transition zone) Vertical seismic profiling (VSP) Combination of the versions presented above, e.g. vibration seismics, wireless and cable-connected on land and in shallow water with infill and airgun excitation Reclamation, removal of potential damage 	<ul style="list-style-type: none"> Seismic 2D-/3D-/4D-Processing Optimal static corrections Full-waveform inversion (FWI) Multiple elimination Post stack time migration Reprocessing of legacy data Pre-stack time migration Pre-stack deep migration CRS - Common Reflection Surface Stack AVO - Amplitude Versus Offset Further special data processing for optimal interpretation, e.g. Shearwater Reveal, Landmark ProMAX/ SeisSpace, OpenGeophysical, OpenCPS, Tsunami Development, Paradigm GeoDepth/ EarthStudy 360, CGG-Veritas, Hampson-Russell Evaluations of other geophysical methods (gravimetry, magnetotellurics, etc.) 	<ul style="list-style-type: none"> Interpretation of 2D, 3D and 4D seismics Integration and interpretation of further geophysical measurements (e.g. gravimetry, magnetotellurics) Integration of geophysical borehole measurements Facies analysis and spatial modelling Attribute analysis of 3D seismic datasets Time/depth conversion 3D structural models for complex tectonic conditions Disturbance characterisation Stress field analysis Creating block models and spatial distributions of storage site parameters Consultation on bore path planning & preparation of preliminary profiles Evaluation and adjustment of existing models in ongoing drilling operations Third party seismic and geological evaluation (2nd opinion) 	<ul style="list-style-type: none"> Numerical groundwater models Geothermal use of pit water Numerical pit water models Geothermal simulation Fissure flow models Mass transfer and reactive mass transfer Heat transport Multiphase flows 	<ul style="list-style-type: none"> Drilling site selection Detailed planning Site investigation Drilling site statics Permit rights and procedures Explosive ordnance detection Construction supervision <p>Prepare the boreholes well and avoid surprises</p> <ul style="list-style-type: none"> Drilling planning and design Preparation of tender documents Support in evaluating the tenders Permit rights and procedures Detailed planning of the borehole measurements and trials Drilling monitoring 	<ul style="list-style-type: none"> Preservation of evidence by publicly appointed experts from the DMT measuring station in accordance with BlmSchG Operation of state-of-the-art vibration measurement systems in accordance with international standards Planning, setup and operation of local seismological measurement networks Safe data storage on in-house TÜV database clusters Implementation of extensive early warning and alarm functions Implementation of traffic light systems for project control Support at information events and in setting up websites to provide transparent information to authorities and the public 	<ul style="list-style-type: none"> High temperature probes (up to 175°C) Measurements in deep boreholes (6000 m+) Probes for large bore diameters (up to 43") Acquisition of geothermal parameters / temperature profiles Acquisition of geomechanical parameters Reservoir characterisation Facies, structure and lithology analysis Mineralogy recording Geomechanics & stress analysis Borehole integrity 	<ul style="list-style-type: none"> Project management & project development Concept studies Grant applications Approval procedures Cross-trade construction and equipment planning (process, piping and steel structure, EI&C technology, concrete construction, building) across all project phases Construction management for equipment erection Metrology Mains connection Initial startup Maintenance

You can find out more about the comprehensive control of deep geothermal energy with DMT on our website:



DMT – Your professional partner

As your partner, DMT is an internationally-active, independent engineering and consulting company with a focus on the fields of geo-energy and resources, plant engineering and process engineering, construction and infrastructure, product testing and building safety in addition to industrial testing and measurement technology.

As a member of the TÜV NORD GROUP, DMT is committed to independence, sustainability and safety.

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