Geothermal heat solution systems

GWE
GERMAN WATER
and ENERGY GROUP

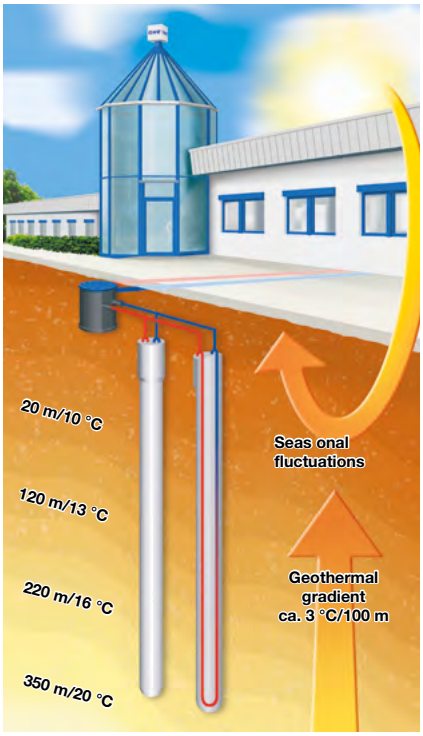
GWE – Your partner for all engineering services and geothermal heat solution systems

In collaboration with our colleagues from the BAUER Group and our system partners, we advance existing solutions and develop new solutions in geothermal application technologies.

In addition to the manufacture of geothermal system components, we design, develop, and implement holistic geothermal heat solution systems.
In addition to the development of special products and components that improve and simplify site processes, the focus of our actions is on the economic and ecological benefit for our clients and design partners.

Health, safety, and environmental protection are our top priority.

This guiding principle is effectively implemented, systematically documented, and regularly audited by our quality management system (DIN ISO 9001) and the BAUER HSE system (Health, Safety, and Environment).



Overview of our range of services

Engineering Services

In collaboration with our partners in Bauer Umwelt, the environmental division of BAUER Resources GmbH, we create:

- Feasibility studies
- Profitability analyses
- Planning and design
- Finite Elements Method simulations acc. to VDI 4640
- Pipe network designs

Geothermal Heat and Construction Services

- Manufacture of all components
- Installation of all components
- Commissioning of the system

Our customers can enjoy the following benefits:

- ✓ Comprehensive geothermal system solutions – Optimal utilization of available resources
- ✓ Highest profitability – We ensure lowest investment cost through perfectly matched components from our own production
- ✓ A one-stop service – just one point of contact!

LGA InterCert Zertifiziertes QM-System DIN EN ISO 9001:2015

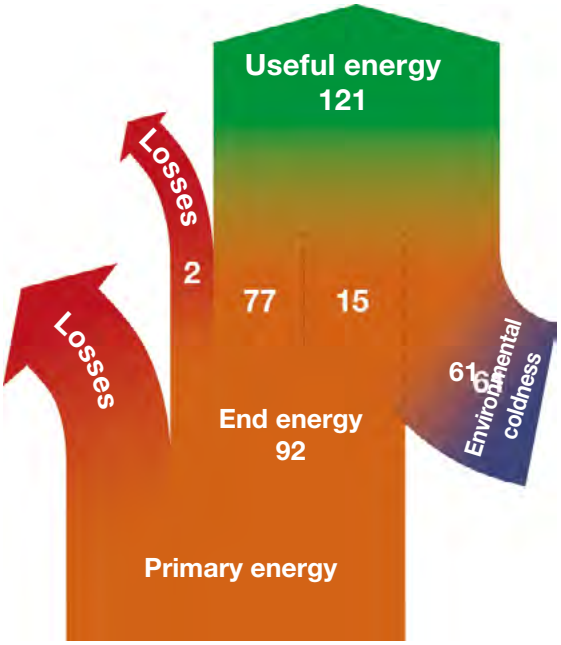
LGA InterCert Zertifiziertes UM-System DIN EN ISO 14001:2015

LGA InterCert Zertifiziertes Arbeits- und Gesundheitsschutz-Managementsystem BS OHSAS 18001:2007

EMB Wertemanagement Bau
Werte ▪ Compliance ▪ Integrität

Engineering Services

Combines all necessary disciplines under one roof



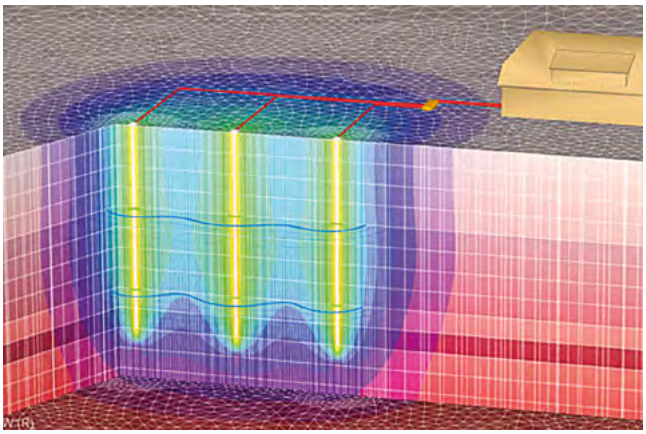
Combines all necessary disciplines under one roof

Efficiency meets comfort

Geothermal heat systems are indisputably the most environmentally friendly, cost-effective, and energy-efficient heating and cooling technology for buildings.
Using the building subsurface as an energy source make it possible to save over 50 per cent in operating costs!
Geothermal heat solution systems are suitable for most building types:

- Residential, business, and office buildings
- Schools, universities, and hospitals
- Hotels, wellness centers, and swimming pools
- Manufacturing buildings and halls, etc.

can be heated and cooled with the highest energy efficiency.

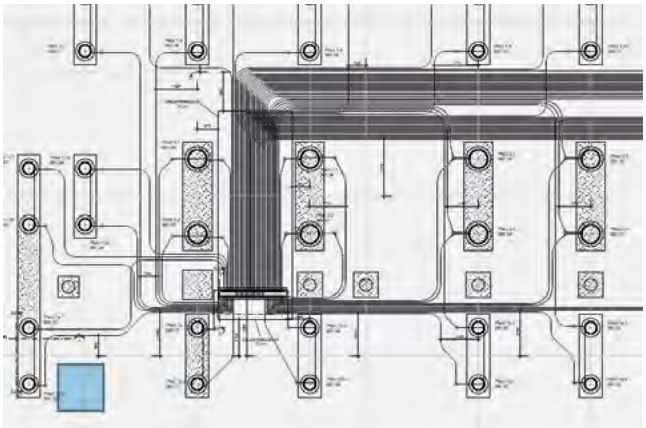


Example of a simulation according to VDI 4640 Chart: DHI WASY GmbH

Simulations in accordance with VDI 4640

Every project is different and every building has different requirements, which is why our engineers deal with your queries on a case-by-case basis.

We investigate the existing geothermal potential on-site by simulating the planned operation of the system over a period of 25 years (or longer) according to VDI 4640 specifications.



Example of a pipe network analysis

Engineering

Geothermal heat systems are complex and subject to a variety of influencing factors.

Only by looking at the conditions as a whole and adopting an interdisciplinary design approach can the system be operated in a reliable and efficient manner for years to come.

Benefit from our expertise based on over 200 large-scale projects!

Our design consultants are happy to support you!

Construction services in specialist foundation engineering

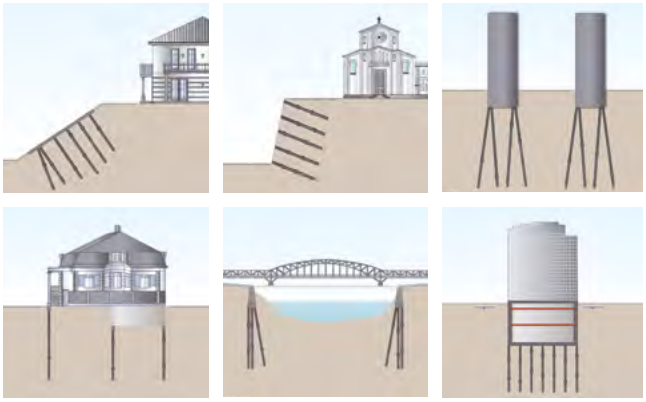
Geothermal heat solution systems of the highest standard

Energy piles

Pile foundations are used to transfer high structural loads to the lower, load-bearing soil strata, e.g. if the subsoil of a building does not have sufficient load-bearing capacity for a foundation slab.

Bored piles are also used as supporting walls (in a row or secant) to secure construction pits or embankments and to shut off groundwater.

In most cases, these foundations can be thermally activated to supply the building with heating and cooling energy. Activating this source of energy is therefore only a small task.



Ductile energy piles

The ductile pile is a simple, quickly implemented, and highly effective deep foundation system.
The industrially prefabricated driven pile, made of ductile cast iron, guarantees maximum quality and a secure foundation without the need for complex drilling operations.

Thermal activation of ductile piles is one of the core competencies of the GWE.

Special applications

Foundation engineering has a variety of tasks in relation to the design and construction of structures that are located at the ground surface or below the level of traffic routes. Utilization of geothermal energy is possible in most cases.

The development and production of tailor-made solutions is one of our core strengths.

Our design consultants are happy to assist you!

Finding solutions instead of searching for products!

The supply of all necessary materials, mostly produced by our own companies, guarantees the lowest possible investment costs by providing integrated and perfectly matched solutions.

The approved quality of our construction services is the result of many years of experience as well as qualified and continuous research.

You can profit from our expertise too.

GWE product overview

From patent to production – all from our own inhouse development

GWE geothermal probes are manufactured and completely packaged according to the highest quality standards.

In addition to continuous self-monitoring by our quality control system, the pipe and probe production at our plant in Luckau is subject to external monitoring in accordance with the SKZ Guideline HR 3.26 by IMA Dresden.

Our welding machine, specially developed for the manufacture of geothermal probes, guarantees the highest welding quality and records each welding process.

The allocated serial number means that each probe is documented over the entire production process right from the raw material.

GWE geothermal probes therefore provide a maximum of safety and quality.

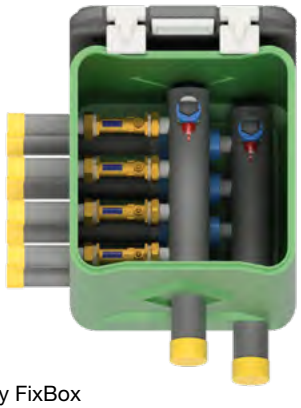
GWE duplex probe with insert lug for probe weight

Distribution shafts

Distributor technologies with the right dimensions

FixBox Pro

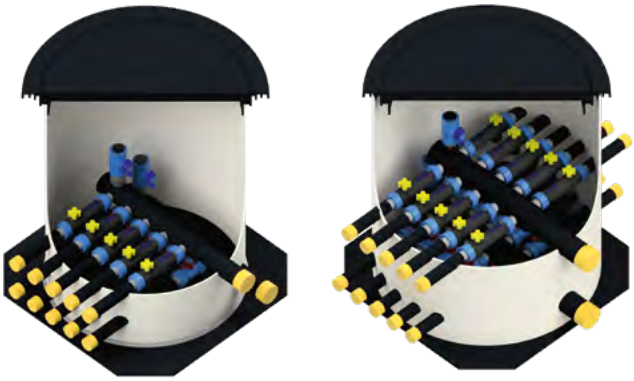
The compact distributor solution for detached and semidetached houses



Example: Four-way FixBox

Compact shafts

For medium-size construction projects



Example: VS 612 Mono 200

Distribution shafts

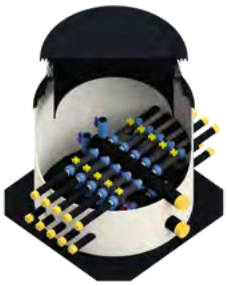
Telescopic mini shaft

The compact distributor solution for installation depth to approx. 700 mm.

Example:
GEO 400

Object shafts

Available as a GEO shaft in all trafficability classes. Tailored to your exact requirements.

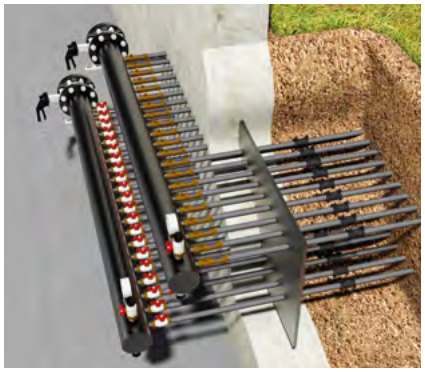


Example: GEO 800

Example: GEO 1500

Concrete distribution shafts

We also supply concrete shaft structures of all sizes to the site, ready to use – just-in-time delivery!



GWE Tight© wall duct

Tight®system – Building ducts

We supply you with ready-to-install shaft structures with integrated system distributors. We have the right solution for any object size and all possible requirements – custom-made and ready-to-install!

As a technical innovation provider in the geothermal heat sector, many of our developments are now industry standard. We create solutions for any requirement in our manufacturing plant. The existing depth of production starts with in-house manufacture of PE shaft bodies and covers all shaft production details using tried and trusted processes.

GWE system distributors

System distributors

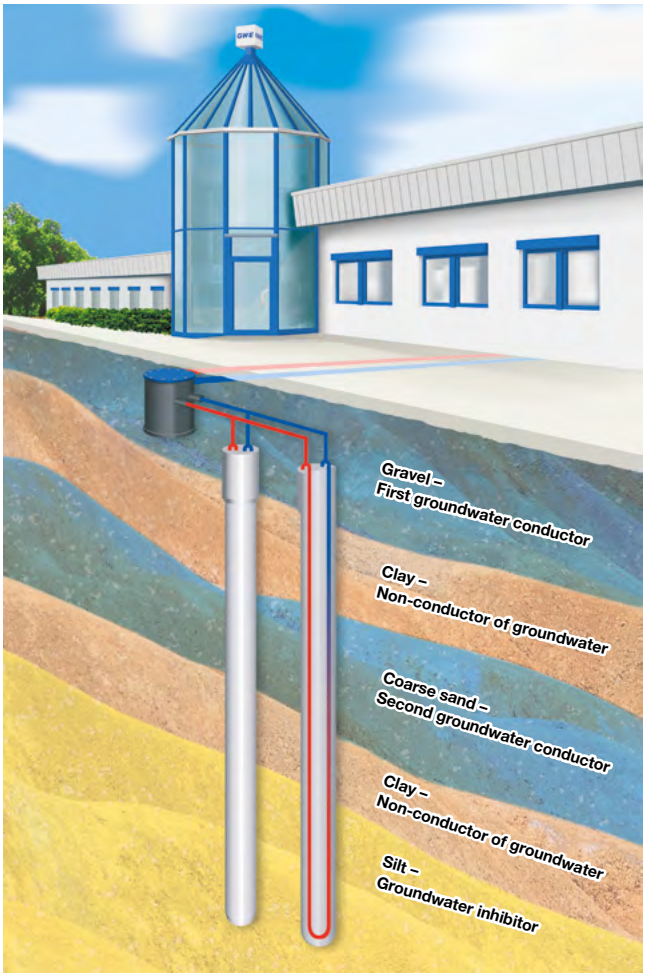
Distribution technology is a key component of geothermal heat solution systems with a variety of tasks. Trouble-free operation of a geothermal system that is reliable and runs efficiently in the long run is only possible once all requirements are fulfilled.
The control system and sensor technology facilitates control of the hydraulic conditions, from the exact adjustment of the required volume flows to continuous monitoring.

Optimized fill material

A complete and safe connection to the bedrock over the entire length of the bore hole is safeguarded through the use of injection suspensions that are installed in the bore hole from the bottom to the top using the tremie method.

Functions of annular space filling

- Prevention of hydraulic short circuits and restoration of the natural pressure and flow conditions in drilled rock.
- Protection of low-lying aquifers from the influx of anthropogenically polluted surface water.
- Realization of a low thermal borehole resistance through gap-free, secure connection of the geothermal probe to the surrounding rock.
- Good thermal conductivity of the backfill material, ideally corresponding to that of the surrounding rock.
- Products which meet these requirements are produced in GWE's own lab, tested and optimized for market launch.



GWE injection materials in geothermal probe drillings serve to protect groundwater and safeguard the thermal connection of the probe tubes with the surrounding rock.

MAT Slurry Handling System mixing and injection installations guarantee the preparation of stable particle suspensions with efficient use materials.

GWE sealing products meet the requirements of VDI 4640 for backfills that ensure a watertight as well as physically and chemically stable, durable socketing of the geothermal probes in the surrounding rock.

GWE ThermoSeal® M clay pellets enable complete sealing of geothermal probes, even in fractured rock and loose sediments with large pore cross-sections and excellent watertightness of the system.

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