

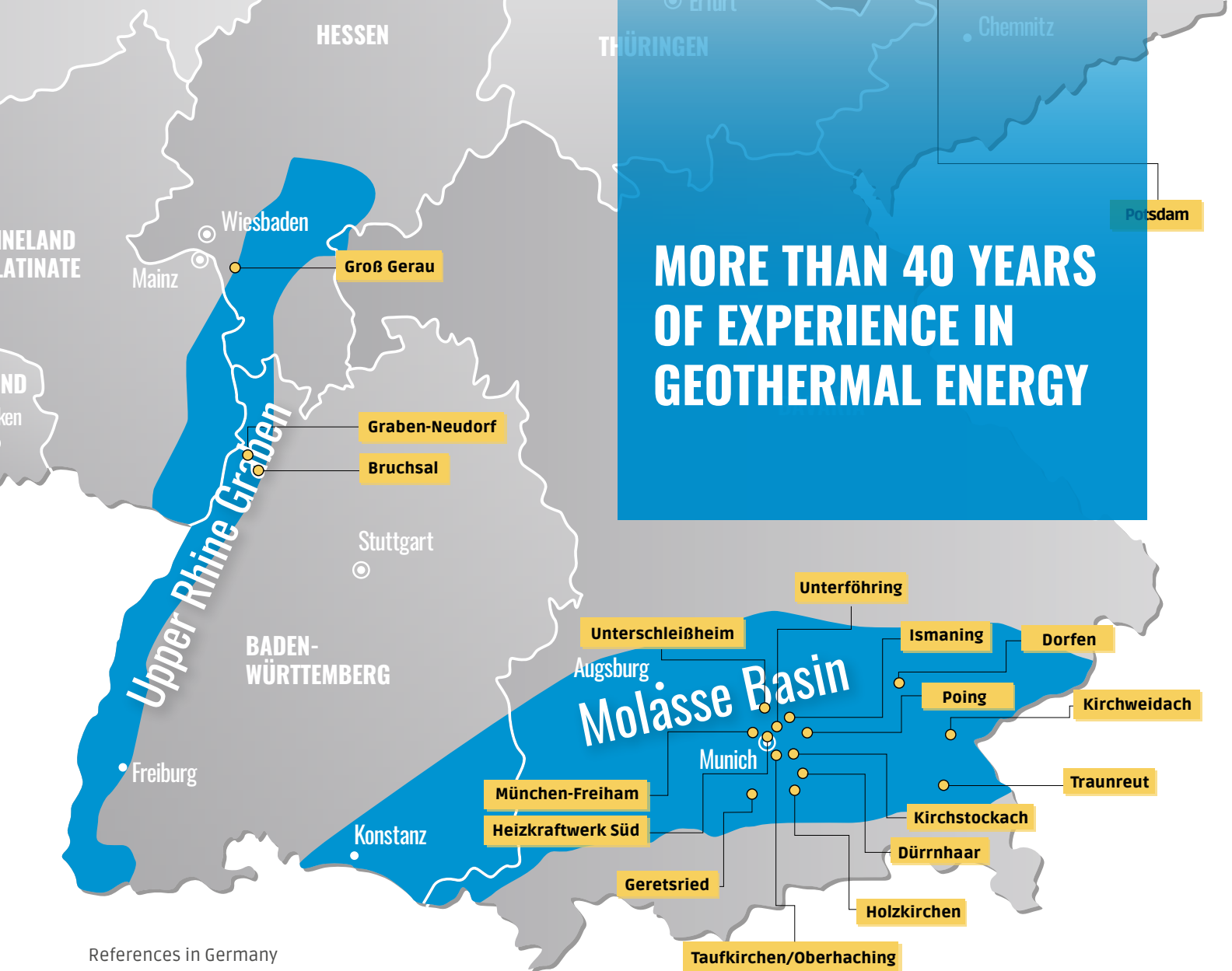
WELLHEADS FOR GEOTHERMAL ENERGY

Your gateway to
renewable energy.

Products.
Engineering.
Service.



Source: Stadtwerke München (SWM), Germany



INTERNATIONAL PROJECTS

UNITED KINGDOM

Cornwall

THE NETHERLANDS

Luttelegeest
Westland
Lansingerland
Middenmeer
Kwintsheul

BELGIUM

Beerse
Balmatt

FRANCE

Illkirch
Soultz-sous-Forêts

SWITZERLAND

Geospeicher Bern
Lully

AUSTRIA

Ried-Mehrnbach
Fürstenfeld/Frutura

TURKEY

Manisa
Denizli
Aydin

HARTMANN VALVES & WELLHEADS - PARTNER WITH GEOTHERMAL EXPERTISE

Hartmann Valves is manufacturing ball valves and wellheads to the highest quality and safety standards since more than 75 years. Traditionally rooted in the oil and gas industry our products are made to withstand harsh environments and designed to last.

We have transferred this experience to the field of deep geothermal energy since the first pioneering projects in 1978. Today we are the leading wellhead supplier in German deep geothermal plants and have equipped numerous international projects with a variety of geothermal conditions including lithium extraction.

Designed to project-specific requirements our wellhead equipment guarantees safe borehole shut-in – even with challenging conditions and scaling build-up. The use of metal-to-metal ball valves on the wellheads ensures extreme reliability, a long service life and low maintenance requirements.

Not only the reliability of the components but also an efficient collaboration between manufacturers, engineering partners and operators are crucial to the success of the projects. Therefore, we support our customers in all project phases – from engineering through inhouse manufacturing, installation on-site, rental equipment, maintenance works such as pump exchange up to the modernisation of existing plants.

Hartmann stands for highest quality „engineered and made in Germany“. Design, assembly and tests are carried out solely in our facilities in Celle and Burgdorf-Ehlershausen. Our family-owned and managed company is in its third generation and continues to evolve as an international operating system supplier now with 200 employees.

Hartmann is certified for API 6A, API 6D, API 7-1 equipment and ATEX.



**INDIVIDUAL
DESIGN**



**SOLUTIONS FOR
EXTREME CONDITIONS**



**QUALITY
THAT PAYS**



**FROM A SINGLE SOURCE
EXPERTISE & ADVICE**

WELLHEADS- FROM ENGINEERING TO OPERATION & MAINTENANCE

It is crucial for the success of a geothermal project that all partners work hand in hand. Ensuring seamless collaboration between engineering partner, operator and manufacturer, Hartmann provides professional support in all project phases. Our customers and partners benefit from sharing more than 75 years of experience and professional expertise.

We offer support from early project development through engineering, manufacturing, installation and maintenance. This begins with guidance by our experienced sales engineers and a product development tailored to the customer and project-specific requirements.

Our production is carried out according to the highest quality standards. For installation, operational support, maintenance and repair works our service team is available around the clock.

The Hartmann philosophy includes the interface-free provision of services from a single source. This is why we maintain our core competences in-house at both German locations and foster the close collaboration of all departments.

Furthermore, it includes compilation of the comprehensive documentation for operator and approval authorities. Thus coherent documentation on the entire component manufacturing process is guaranteed. The fulfilment of the required regulations also greatly facilitates public acceptance for this form of renewable energy.

ENGINEERING

Project-specific design in close cooperation with the engineering partner

MANUFACTURING

From processing of raw material to the final assembly, all production steps are carried out in-house

INSTALLATION

On-site we support with professional wellhead installation service and rental equipment

OPERATION & MAINTENANCE

24/7 operational support, spare parts and regular inspections

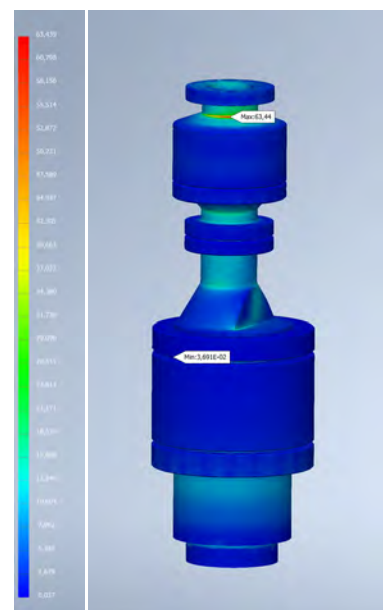
ENGINEERING OF HARTMANN WELLHEADS

As a secure interface between underground and surface installations our wellhead equipment meets the highest requirements regarding safety, quality and durability.

Adapted to project-specific requirements and designed for the highest flow rates and temperatures, our wellheads provide maximum operational safety and plant availability. By default they are equipped with gas-tight ball valves which have a metallic sealing between ball and seat to guarantee a high reliability and long service life.

YOUR BENEFITS IN THIS PROJECT PHASE

- ✓ Close cooperation with project partners
- ✓ Customised, project-specific design
- ✓ Consideration of long-term economic efficiency
- ✓ 3D drawings and FEM analysis
- ✓ Comprehensive documentation for approval authorities



WELLHEAD DESIGNS

Our API wellheads in customised design are made of high-quality materials. They are equipped with gas-tight, metal-to-metal sealing ball valves. They withstand high temperatures up to 400 °C (752 °F) and pressures up to 10.000 psi. Special designs provide additional safety and economic benefits.

CUSTOMISED DESIGN HIGHLIGHTS

- ESP and LSP design
- Interchangeable design for production or injection
- Integration of several components in one block with less flange connections
- Control and injection lines
- Horizontal or vertical ESP Plug-in connection
- Additional connection ports (e.g. for injection, measurements)
- Flexible fail-safe-close automatisisation with electric, hydraulic or pneumatic actuator

EXAMPLES



HORIZONTAL ESP PLUG-IN

- Less components – less height
- Cost-saving workovers
- Quick pump exchange
- Modular design for ESP



VERTICAL ESP PLUG-IN

- Eccentric ESP design for production
- Master valve equipped with fail-safe-close actuator



DOUBLE BARRIER DESIGN

- Twin ball valves for doubled safety in short length
- Interchangeable design (production or injection)

SECURE SHUT-OFF EVEN WITH SCALING

The core element for operational safety of wellheads are the shut-off valves. In contrast to gate valves, ball valves have the advantage that even with scaling deposits in the pipe they close securely and require significantly less maintenance. Integrated metal-to-metal ball valves offer a higher degree of safety, as they are less likely to blocking, are subject to less wear and do not need to be filled with grease, which could contaminate downstream equipment.

With high safety factor levels Hartmann ball valves are true working valves with throttling function. If required they are provided with flushing connections, e.g. for acidification. Due to their equal overall length, gate valves can be easily replaced at the wellhead. For API 6A ball valves we offer a standard delivery program with short lead times.



KEY FACTS ABOUT HARTMANN BALL VALVES

- Durable special valves provide a reliable shut-off
- Gas-tight with metal-to-metal seal between ball and seat ring
- Two independent barriers – Double Isolation and Bleed (DIB)
- Test in the pipeline – Double Block and Bleed (DBB)
- Triple sealing technology
- Nominal sizes up to 13-5/8"
- Face-to-face length equals API 6A gate valves



WHY BALL VALVE INSTEAD OF GATE VALVE AT THE WELLHEAD?



HIGHER OPERATIONAL SAFETY



MINIMIZED MAINTENANCE



HIGHER PLANT AVAILABILITY



REDUCED COSTS



ENVIRONMENTALLY FRIENDLY



VIDEO:

Why ball valves instead of gate valves?
www.6aballvalves.com



MANUFACTURING OF HARTMANN WELLHEADS

Thanks to their above average durability, Hartmann products amortise themselves sooner than fast-wearing products which entail high maintenance cost, expensive down time and early reinvestments. In order to guarantee this high product quality, we select our suppliers thoroughly and source only high quality material. In order to provide necessary components with short lead time we keep various raw materials in stock.

MADE IN GERMANY

We develop, assemble and test exclusively in Germany. Our locations at Celle and Burgdorf-Ehlershausen deploy the most modern production techniques in this respect. As a certified welding fabricator approved to DIN EN ISO 3834-2, we undertake connecting and overlay welding for new production and repairs to ball valves and wellheads. Decisive for the success of our solutions and innovations is the know-how and the expertise of our employees who in some cases have been with Hartmann for decades.

The scope, the completeness and the transparency of our product-accompanying documentation of all components is held in high regard by our customers.

100% TESTING

In order to guarantee the required gas leak-tightness, each and every valve and every wellhead component is tested at Hartmann. This takes place in due consideration of the highest quality and test procedures in accordance with the applicable standards and customer specifications. In this regard, our quality assurance system encompasses not only proven procedures and processes but also ensures seamless material traceability. The respective quality and test plans are attuned to our customers. The supervision of approvals is possible at any time.

INSTALLATION OF WELLHEAD EQUIPMENT

Upon request our service personnel is pleased to offer support in geothermal projects at any time: For extensive jobs such as installation or modification of wellheads, for installation and removal of valves in plants, for assistance during revisions or for maintenance of our products – our expert team will be available. For all service works appropriate tools are used and support by our engineering department is ensured as needed.

In case of particular wellhead services special equipment such as PBVs (Back-Pressure Valves) or TWCVs (Two-Way-Check-Valves) is available on rental basis and can be installed and removed by us upon request.

Our experienced and competent service staff is trained in accordance with SCC (Safety Certificate Contractors), as well as with respect to first aid and to customer-specific safety trainings and instructions.

Also in the service sector, our customers benefit from decades of experience in the oil and gas industry. Not only do we continuously incorporate the findings and feedback into our product development, but the know-how of our service team is also constantly growing.



YOUR BENEFITS IN THIS PROJECT PHASE

- ✓ 24/7 availability of our service team
- ✓ Certified personnel
- ✓ Rental equipment and tools
- ✓ Spare part and operations support
- ✓ In-depth product knowledge
- ✓ Components designed for fast and easy installation

OPERATION & MAINTENANCE

In order to extend the life cycle of our wellheads and ball valves we are offering inspection services, original spare parts as well as a variety of maintenance and repair options. Our service team also supports at pump exchanges with wellhead related works.

SPARE PARTS

Hartmann Valves supplies original spare parts upon request. With every spare part request or repair job we give advice on the latest developments and product upgrades. The use of original spare parts ensures the best performance and durability of our products.

PREVENTIVE MAINTENANCE

Since the wellhead is such an important part of the well barrier, we recommend performing periodic inspections to make sure the wellhead components are in an adequate condition. Various challenges in a production life of a well are influencing the wellhead condition. Regular documented checks are minimizing the risk of safety hazards and downtime. We offer inspection plans and framework contracts.

Obviously a leaking seal, flange connection or valve would have a dramatic impact on the integrity and could become a major safety hazard. Events like this need to be avoided and regular documented checks are minimizing the risk.

MODIFICATION AND REPAIR JOBS

The majority of our repair works are overhaul jobs of equipment being installed for decades and implementing modifications requested by our customers. A typical example is the addition of an extra feedthrough into our hanger/pack-off combination. With our strong engineering group we worked out lots of tailor-made solutions for our customers. For example for modernisation of existing geothermal plants we design tailor-made wellheads. Adapted to the existing piping system this wellhead provides higher safety standards and automatisisation level with a fail-safe-close actuator.



ADDITIONAL EQUIPMENT

RENTAL EQUIPMENT

We rent tools and service equipment for every stage of the life cycle of a well. With our strong service tool fleet we are not only well prepared for installation and maintenance services but also for other challenges arising on-site. BPVs/TWCVs, a high-pressure lubricator, hydraulic torque wrenches, external compressed air casing cutter, pressure test equipment and much more are available for customer-specific needs.

Hartmann Valves' rental portfolio is growing every week. Obviously we sell and rent API 6A ball valves. The picture shows a rental Twin Ball Valve providing compact double safety for the well barrier. Additionally, a good stock of flanges, spools, other wellhead components or a complete debrining wellhead is available. Our competent and experienced service personnel is ready to support your operations installing and running the above mentioned equipment.



KELLY VALVES

Used as a safety valve in drilling rigs the Kelly Valve enables an interruption of the flow inside the drill string. Depending on the conditions, we supply our Kelly Valves with different overall lengths, external and internal diameters as well as thread types. Manufacturing is done according to API specifications 7-1 and in compliance with ISO 9001:2015 (certification (Type Approval) by ABS and DNV is possible). Hartmann Kelly Valves are available in three types: Standard Kelly Valve, Double Shaft Kelly Valve, Twinball Quad Shaft Kelly Valve.

Technical characteristics:

- One-piece-body
- Floating ball
- Metallic sealing
- Spring-loaded-seats
- H2S Trim
- CLASS 2
- Temperature class L/X



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