German Geothermal Congress 2018

Workshops: 27 November
Congress: 28 + 29 November
Haus der Technik, Essen - Germany

Velkommen!
Partner country
Denmark

SAVE THE DATE
DGK 2019
19–21 November
Science Congress
Center Munich

Program

Patron: Peter Altmaier
Federal Minister for Economic Affairs and Energy

update: 19.10.2018

Congress Office

German Geothermal Congress 2018
Bundesverband Geothermie e.V. (German Geothermal Association e.V.)
Albrechtstr. 22 • 10117 Berlin
Phone: +49.(0)30. 847 121 280 • Fax: +49.(0)30. 847 121 289
www.geothermie.de
dgk2018@geothermie.de

Venue

Haus der Technik
Hollestraße 1 • 45127 Essen - Germany
www.hdt-essen.de

Hotel room contingents in the nearby hotels are available. Further information and discounted train tickets can be found on the congress website www.der-geothermiekongress.de.

Getting there

The venue »Haus der Technik (HdT)« is located directly opposite the Essen Central Station. From the »Exit City« of the station you will find the HdT diagonally right across the street.

By car
- From the A3 / A52 take the exit E-Zentrum / E-Süd.
- coming from the A40 coming from Duisburg exit »E-Zentrum« or »E-Zentrum-Ost«
- coming from the A40 coming from Dortmund the exit E-Huttrop.

Please note the environmental badge requirement.
Parking is available in the car park at Akazienallee 1, 45127 food (10 € daily rate) or in the public car park at the Junction Hollestraße / Steeler Straße (5 € daily rate).

When flying to »Düsseldorf Airport International« please use within the airport the »Sky Train« to the station Dusseldorf airport. From there are various connections to Essen Central Station available (travel time about 30 minutes).

Wiki05/commons.wikimedia.org

Proceedings

Conference proceedings with abstracts and long versions of the lectures will be in the closed area under: www.geothermie.de/DGK-Tagungsband2018
The login data will be provided at the congress.

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Overview

- Lectures and presentations will be held in the **forums (F)** submitted by authors in recent months. From the submissions the Scientific Committee chose contributions and posters.
  The forums will be held on the 28–29 of November.

- The **workshops (W)** were conducted by experienced geothermal experts. The workshops take place on 27 November.

- Projects and research will be presented on **posters** in the science exhibition. In the poster session, the poster of the forums and the Science Bar posters will be presented. It takes place on 28 November at 16 o'clock.

- The **Science Bar** offers a special offer for young scientists.

- The conference **languages** are German and English. Exact information to the languages of the individual events, see program.

- **Partner country** of the DGK 2018 is Denmark.

- Online **congress registration** is possible up to two weeks before congress (09.11.2018). At the venue registration is possible at any time with a surcharge of 10%.

- Further information at www.der-geothermiekongress.de

We warmly thank all our partners and sponsors for their support of the DGK 2018.

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For further information please visit www.der-geothermiekongress.de or contact us via dgk2018@geothermie.de.

Foto: Bundesverband Geothermie

Greeting from Erwin Knapek president of the German Geothermal Energy Association

Dear Sir or Madam,

I am overwhelmed by the large participation at the Call for Papers. Thanks to your commitment, we were able to further expand the program at the Geothermal Congress. Together with our partners we can offer you 21 forums in four continuous strands on the two congress days (28/29 November). There will also be 7 workshops on the opening day (27 November) and one on 29 November and 38 posters in the congress and at the Science Bar. The program will be complemented by a cross-over workshop organized by the German Geothermal Energy Association and European Association of Geoscientists and Engineers (EAGE) on 29 November. The social program of the DGK 2018 also invites to relaxed networking. On Tuesday we invite you together with the Energieagentur.NRW to the Icebreaker evening. And on Wednesday, we would be happy to welcome you to the traditional social evening.

I would like to invite you to take a closer look at this program and even more to help shape the intergenerational project of the energy transition with us. Geothermal energy is environmentally friendly, economical and safe. These and other advantages speak in favor of using geothermal energy. It is up to us to provide good examples to convince more and more people. The exchange during the DGK 2018 is the ideal platform here.

With warm regards,

Erwin Knapek

president of the German Geothermal Energy Association

Schedule

Tuesday 27/11

workshop day

start			
10:00	registration (all-day)		
11:20 to 13:00	W 1 Die neue VDI 4640	**W 2** **Scalings – Monitoring & Forensics**	W 3 Dolomitkluft
13:00	lunch break		
14:00 to 15:40	W 1 Die neue VDI 4640 __continuation	**W 4** **Scalings – Prevention & Control**	**W 5** **Partner country Denmark**
15:40	coffee break		
16:00 to 17:40	W 6 Innovative Anlagen für TGA-Planer und Architekten	**W 7** **Corrosion**	**W 5** **Partner country Denmark** __continuation
18:00	Mitgliederversammlung		
20:00	**icebreaker evening**		

Wednesday 28/11

1st congress day

start				
08:30	registration (all-day)			
09:30	**Opening** **Keynote: Prof. Dr. Pinkwart & award ceremony Patricius Medal**			
11:00	coffee break			
11:20 to 13:00	F 1 Oberflächennahe Potenziale	F 2 Reservoire in Bayern	**F 3** **New approaches in geothermal energy**	**F 4** **Well integrity 1** **continuation**
13:00	lunch break			
14:00 to 15:40	F 5 Wärmespeicher	F 6 Explorations-methoden (TG)	**F 7** **Drilling and production**	**F 8** **Well integrity 2** __continuation
15:40	coffee break			
16:00 to 17:40	F 9 Materialien und Qualitätssicherung (ONG)	F 10 Fluide und Inhibitoren	Poster-Session Science Bar	**F 11** **International projects**
19:30	**social evening** __at the Mezzo Mezzo ▪ Kettwiger Str. 36 ▪ 45127 Essen			

F _forums
W _workshops

Thursday 29/11

2nd congress day

start				
08:30	registration (all-day)			
09:30 to 11:00	**Keynote speech & award ceremony** **Keynote: Ullrich Bruchmann** **Award ceremony: Young Scientists & Science Bar**			
11:00	coffee break			
11:20 to 13:00	F 12 Reservoire außerhalb Bayerns (TG)	F 13 Nutzung von Grubenwässern	F 14 Statusreport Multifrac (TG)	**W 8** **Environmental Impact Monitoring**
13:00	lunch break			
14:00 to 15:40	F 15 Wissenschaft in der praktischen Anwendung	F 16 Charakterisierungen und Verbesserungen (TG)	F 17 Statusreport PrognosPermae (TG)	**W 8** **Environmental Impact Monitoring** __continuation
15:40	coffee break			
16:00 to 17:40	F 18 __Hörsaal A1 Betrieb und Nebennutzung (TG)	F 19 __Hörsaal B Vergleich oberflächennaher Anlagentechnik	F 20 __Hörsaal A2 Bohrtechnik und Stimulation	F 21 __Raum 609 Klimaschutzpolitik und Geothermie

Subject to change (last update: 19.10.2018)

Workshop Day // Tuesday 27/11

11:20–13:00	W 1	Die neue VDI 4640
	W 2	Scalings – Monitoring & Forensics
	W 3	Dolomitkluft
14:00–15:40	W 1	Die neue VDI 4640 _Fortsetzung
	W 4	Scalings – Prevention & Control
	W 5	Partner country Denmark
16:00–17:40	W 5	Partner country Denmark _Continuation
	W 6	Innovative Anlagen für TGA-Planer & Architekten
	W 7	Corrosion

W 2 Scalings – Monitoring & Forensics

27/11/2018 // *11:20 - 13:00*

Chair: Thomas Baumann, Technische Universität München

Summary: The **workshop sessions on ›scalings and corrosion‹** aim to give participants a sound overview of the causes and effects of chemical reactions between thermal waters and elements of a deep geothermal plant and will show how the effects can be diminished. The workshops are organized by the Geothermal-Alliance Bavaria (GAB, www.mse.tum.de/gab/), a collaborative research project that follows a holistic approach in order to expand the deep geothermal potential in Bavaria. Research in the project is in depth with actual practice and therefore sets high value on the ›operational reliability of the thermal water cycle‹.
The workshops are partitioned into three thematic sessions:

›Scalings - Monitoring & Forensics‹ gives an overview of current research in geothermal scalings with a particular focuses on the causes and introduces monitoring concepts. The session furthermore demonstrates how numerical modeling can quantify THC processes that lead to scalings.

Target group: Plant operators, scientists and engineers, students from the field of deep geothermal energy

Speakers:

W 2.1_ Scalings – Present, Past and Future
Thomas Baumann, Technische Universität München

W 2.2_ Causes of abundant calcite scalings in the Bavarian molasse basin
Florian Eichinger, Hydroisotop GmbH

W 2.3_ Observations on growth dynamics, material interfaces and – consistency – a geothermal carbonate scaling forensic approach
Ronny Boch, Technische Universität Graz

W 2.4_ Numerical quantification of scaling processes in boreholes
Fabian Nitschke, Karlsruhe Institute of Technology
Michael Funke, Erdwärme Gemeinschaft Bayern e.V.

W 4 Scalings – Prevention & Control

27/11/2018 *// 14:00 - 15:40*

Chair: Florian Eichinger, Hydroisotop GmbH

Summary: ›Scalings - Prevention & Control‹ covers suitable countermeasures based on experiences from research and industry in order to control scalings. Attention is drawn to the selective application of different inhibitors with respect to the geothermal reservoir type, thermal water chemistry and multitude of technical elements of the geothermal plant.

Target Group: Plant operators, scientists and engineers, students from the field of deep geothermal energy

Speakers:

W 4.1_ **Eva-M project: on the experiences of carbonate inhibitor applications in the Bavarian molasse basin**
Florian Eichinger, Hydroisotop GmbH

W 4.2_ **Scale and corrosion inhibition in the Netherlands and France**
Hans van't Spijker, Geofluid

W 4.3_ **Mineralogical characteristics of scalings formed in presence of a sulfate inhibitor – indications for links between scale formation and corrosion**
Frank Heberling, Karlsruhe Institute of Technology

W 4.4_ **Premium descaling of geothermal plants and their components**
Nils Lummer, Fangmann Energy Services

W 5 Partner Country Denmark

27/11/2018 *// 14:00 - 17:40*

Chair: Claus Heske, IGO & Henrik Bjørn; VIA University College

Summary: The workshop will present the geothermal resources and potentials as well as the economic and political framework conditions for the use of shallow and deep geothermal energy in the partner country Denmark. Furthermore, various technical systems and latest developments for the exploitation of geothermal energy and their potential involvement in district heating grids or heat storage projects will be discussed.
The workshop will build up new networks and intensify existing ones. The bidirectional exchange of knowledge and experience is at the forefront. The workshop will bring together scientists, planners, project developers and product manufacturers from both countries to explore the potential for joint projects between the two neighbouring countries.

Target Group: scientists, planners, drilling companies, project developers and product manufacturers

W 7 Corrosion

27/11/2018 *// 16:00 - 17:40*

Chair: Hans-Jürgen Friedrich, Fraunhofer-Institut für Keramische Technologien und Systeme IKTS

Summary: ›Corrosion‹ aims to compare different construction materials relating to the reliability and resistance during their application in deep geothermal plants. In this context, suitable corrosion monitoring and test systems are presented, which can also withstand increased salinity, temperature and pressure conditions in the borehole.

Target Group: Plant operators, scientists and engineers, students from the field of deep geothermal energy

Speakers:

W 7.1_ Behavior of sealing materials under operating conditions in deep geothermal energy
Hans-Jürgen Friedrich, Fraunhofer-Institut für Keramische Technologien und Systeme IKTS

W 7.2_ Challenges for the mechanical behavior of materials in geothermal plant applications
Ralph Bäßler, Bundesamt für Materialforschung und –prüfung, BAM

W 7.3_ Lessons learned from long-term corrosion investigations and –monitoring in saline thermal waters
Simona Regenspurg, Helmholtz-Zentrum Potsdam, GFZ

W 7.4_ Management of corrosion in French geothermal projects
Catherine Baranger, Antea®Group

1st Congress Day // Wednesday 28/11

09:30-11:00		**Opening & Keynote** **Award ceremony Patricius Medal**
11:20-13:00	F 1	Oberflächennahe Potenziale
	F 2	Reservoire in Bayern (TG)
	F 3	**New approaches in geothermal energy**
	F 4	**Well integrity under high temperature conditions 1**
14:00-15:40	F 5	Wärmespeicher
	F 6	Explorationsmethoden (TG)
	F 7	**Drilling and production**
	F 8	**Well integrity under high temperature conditions 2**
16:00-17:40	F 9	Materialien und Qualitätssicherung
	F 10	Fluide und Inhibitoren (TG)
		Postersession
	F 11	**International projects**

Opening, Keynote & Award Ceremony

28/11/2018 // *9:30 - 11:00*

The Congress will be opened by BVG-President Erwin Knapek and the North Rhine-Westphalian Minister of Economic Affairs Prof. Dr. Pinkwart. The Patricius Medal is awarded during the opening ceremony.
Please be aware that the opening ceremony will be in German without translation.

Keynote: **Prof. Dr. Pinkwart,** North Rhine-Westphalian Minister of Economic Affairs

F 3 New approaches in geothermal energy

28/11/2018 // *11:20 - 13:00*

F 3.1_ Continuous gravity in a volcanic geothermal field: contribution to understand mass changes
Kemâl Erbaş, International Centre for Geothermal Research;
Co-Autor(en): Philippe Jousset, Florian Schäfer, Andreas Güntner, Tilo Schöne, Benjamin Maennel, Ásgrímur Guðmundsson, Gylfi Páll Hersir, Freysteinn Sigmundsson, Jacques Hinderer, Arthur Jolly, Jean-Daniel Bernard, Nolwenn Portier, Richard Warburton

F 3.2_ The temperature field of Denmark: New insights from borehole measurements and 4D numerical modelling
Sven Fuchs, GFZ Potsdam; Co-Autor(en): Niels Balling, Anders Mathiesen

F 3.3_ EGS-related characterisation of Variscan metasedimentary rock units
Bernd Leiss, Universitätsenergie Göttingen GmbH; Co-Autor(en): Bianca Wagner, Ghislain Trullenque, Albert Genter, Kristian Bär, Harald Milsch, Erik Rybacki, Yves Vanbrabant, Carl-Heinz Friedel

F 3.4_ Injection-triggered occlusion of flow pathways in sedimentary basins
Maren Brehme, GFZ Potsdam; Co-Autor(en): Abel Marko, Kerstin Nowak, Sigitas Petrauskas, Siklosi Istvan, Axel Sanden, Guido Blöcher, Ernst Huenges

F 3.5_ Geomechanical considerations about induced seismicity in the Bavarian Molasse Basin
Robin Seithel, KIT; Co-Autor(en): Birgit Mueller, Thomas Kohl

F 4 Well integrity under high temperature conditions 1

28/11/2018 // 11:20 - 13:00

Summary: GeoWell is a three-year collaborative research project funded by the European Commission in the Horizon 2020 framework. It aims at developing reliable, cost effective and environmentally safe technologies for design, completion and monitoring of high-temperature geothermal wells. A special focus lies on: cement and sealing technologies, materials and coupling of casings, fiber optic well integrity monitoring and risk assessment methods. Technologies were tested in laboratories and partly in real geothermal well environments.

F 4.1_ GeoWell- Development, testing and modelling of cements for high-temperature geothermal wells
Jan ter Heege, TNO; Co-Autor(en): Jens Wollenweber, Frank Vercauteren, Penny Pipilikaki, Marcel Naumann

F 4.2_ GeoWell: Geochemical assessment of cement durability in the super-critical domain
Adeline Lach, BRGM; Co-Autor(en): L..J. Wasch, P. Blanc, L. André, P. Pipilikaki, P. Durst

F 4.3_ GeoWell: Primary cementing of geothermal wells
Hans Joakim Skadsem, IRIS; Co-Autor(en): Steinar Kragset

F 4.4_ GeoWell: Real Time Well Integrity Monitoring Using Fiber Optic Distributed Sensing
Thomas Reinsch, Deutsches GeoForschungsZentrum GFZ; Co-Autor(en): Martin Peter Lipus, Tobias Raab, Santiago Aldaz, Cornelia Schmidt-Hattenberger, Jan Henninges, Rob Jansen, Lun K. Cheng, Wim de Jong

F 4.5_ GeoWell - Development of a Fiber Optic System for Real-Time Monitoring of dynamic strains
Rob Jansen, TNO; Co-Autor(en): Wim de Jong, Lun Cheng, Ed Doppenberg, Jens Wollenweber, Thomas Reinsch

F 8 Well integrity under high temperature conditions 2

28/11/2018 *// 14:00 - 15:40*

Continuation of F 4

F 8.1_ GeoWell – Corrosion Testing of Materials in Geothermal Steam
Ingólfur Thorbjornsson, ÍSOR - Iceland GeoSurvey;
Co-Autor(en): Gunnar Skúlason Kaldal

F 8.2_ GeoWell – Flexible Coupling for Thermal Stress Mitigation
Gunnar Skúlason Kaldal, ÍSOR - Iceland GeoSurvey;
Co-Autor(en): Ingólfur Thorbjornsson

F 8.3_ Geowell – Mechanical properties of casing materials up to 550 °C and the impact on casing design
Bert Dillingh, TNO; Co-Autor(en): Frank Vercauteren, Jens Wollenweber

F 8.4_ GeoWell: Well integrity and risk assessment for high temperature geothermal wells – Lessons learnt
Erlend Randeberg, IRIS; Co-Autor(en): Mohammad Mansouri Majoumerd, Eric P. Ford, Hans Petter Lohne

F 8.5_ GeoWell: Reliability analysis of tubular and cement technologies
Hans Petter Lohne, IRIS; Co-Autor(en): Mohammad Mansouri Majoumerd, Eric P. Ford, Erlend Randeberg

F 11 International projects

28/11/2018 *// 16:00 - 15:40*

F 11.1_ Exploring and ensuring geothermal resources for district heating: the PGE project (Bordeaux, France)
Delphine Patriarche, Storengy; Co-Autor(en): Catherine Formento, Thomas Schaaf, Ali Boukemiche

F 11.2_ Geothermal Activity in Denmark
Peter Veenhof, Nail Resources Denmark BV

F 11.3_ Levelized cost of exergy – an exergy-based pricing method for CHPs
Sarah Van Erdeweghe, KU Leuven (EnergyVille); Co-Autor(en): Johan Van Bael, Ben Laenen, William D'haeseleer

F 11.4_ BTESmart an innovative pilot to optimize the coupling of a borefield UTES and thermal solar panels
Charlotte Rey, Storengy; Co-Autor(en): Patrick Egermann, Xavier du Chayla, Julien Camy-Portenabe

F 11.5_ A case study on the impact of shallow geothermal utilization on groundwater temperature change
Haibing Shao, Helmholtz Zentrum für Umweltforschung - UFZ;
Co-Autor(en): Thomas Vienken; Boyan Meng; Olaf Kolditz

2nd Congress Day // Thursday 29/11

09:00–11:00		**Keynote & Award Ceremony: Young Scientists and Science Bar**
11:20–13:00	F 12	Reservoire außerhalb Bayerns (TG)
	F 13	Bergbau Nachnutzung
	F 14	Statusreport Multifrac
	W 8	**Workshop: Environmental Impact Monitoring**
14:00–15:40	F 15	Wissenschaft in der praktischen Anwendung
	F 16	Charakterisierungen und Verbesserungen (TG)
	F 17	Statusreport PrognosPermae (TG)
	W 8	**Workshop: Environmental Impact Monitoring**
16:00–17:40	F 18	Betrieb und Nebennutzung von tiefengeothermischen Anlagen
	F 19	Vergleich oberflächennaher Anlagentechnik
	F 20	Bohrtechnik und Stimulation
	F 21	Klimaschutzpolitik und Geothermie

Keynote & Award Ceremony

29/11/2018 *// 9:30 - 11:00*

Award ceremony for young scientists and Science-Bar-Poster

Keynote: 7th Energy Research Programme
Ullrich Bruchmann, Federal Ministry of Economics and Energy

W 8 Knowledge Exchange Workshop on environmental impact monitoring of Shallow Geothermal Use

29/11/2018 *// 11:20 - 13:00 & 14:00 - 15:40*

Chair: Gregor Goetzl; Geologische Bundesanstalt, Kai Zosseder; TU München
Rüdiger Grimm; geoENERGIE Konzept GmbH

Summary: The knowledge exchange workshop addresses existing concepts and methods as well as knowledge- management gaps concerning the monitoring of shallow geothermal use. In the context of the workshop, monitoring covers the impact of shallow geothermal installations on shallow groundwater bodies as well as the subsurface (environmental impact monitoring). Based on case studies presented in the first session of the workshop, gaps and barriers to overcome as well as approaches for harmonization of methods and concepts will be discussed in the interactive second session of the workshop. The workshop will be organized by the European projects GeoPLASMA-CE, GRETA and MUSE.

Target group: Researchers, planners, authorities, project team members GeoPLASMA-CE, GRETA and MUSE

Speakers: Short introduction (5 min), Case studies (1): max 15 minutes speaking time

- **W 8.1_ Thermal impact assessment of groundwater heat pumps (GWHPs)**
  Alessandro Casasso & Arianna Bucci, Politecnico di Torino (GRETA)
- **W 8.2_ The Cardiff Urban Geo Observatory, UK: monitoring of a shallow unconsolidated urban aquifer**
  Gareth Farr, British Geological Survey (MUSE)
- **W 8.3_ Monitoring the anthropogenic heat impact on a shallow aquifer in Vienna**
  Cornelia Steiner, Geologische Bundesanstalt (GeoPLASMA-CE)
- **W 8.4_ Thermal interaction of neighbourly shallow geothermal systems: An example project from Dresden, Germany**
  Tom Reinhardt, geoENERGIE Konzept GmbH (GeoPLASMA-CE)
- **W 8.5_ Thermal interactions between neighbouring shallow geothermal systems: challenges and possible solutions**
  Henk Witte, Groenholland Geo Energy systems

Question and answer round session I Moderation by G. Goetzl

13:00-14:00 Lunch

Case studies (2): max 15 minutes speaking time

- **W 8.6_ Activities of the Polish Geological Institute – National Research Institute in mapping and monitoring of shallow geothermal energy**
  Maciej R. Kłonowski, Polish Geological Institute (GeoPLASMA-CE)
- **W 8.7_ The role of hydraulic models in the evaluation-process of geothermal use of alpine aquifers ; Example of the touristic centre Davos, Switzerland**
  Peter Huggenberger, Universität Basel (GRETA)
- **W 8.8_ Geothermal use of an Alpine aquifer – pilot study Davos**
  Stefan Scheidler, Universität Basel (GRETA)
- **W 8.9_ Connecting shallow geothermal resources to the Internet of Things**
  Fabian Boettcher, TU München (GRETA)
- **W 8.10_ GEOENVI: Tackling the environmental concerns for deploying geothermal energy in Europe**
  Philippe Dumas, European Geothermal Energy Council.

Discussion round: Moderation by G. Goetzl, R. Grimm and K. Zosseder

Poster Exhibition

28/11/2018 *from 11:20 //*
until **29/11/2018** *17:40 // Wandelgang Süd*

Postersession

28/11/2018 *// 16:00 - 17:40*

P 1_ 3D geological modelling and assessment of geothermal potential in the Wałbrzych region (Poland)
Wiesław Kozdrój, Polish Geological Institute - National Research Institute;
Co-Autor(en): Urszula Wyrwalska, Małgorzata Ziółkowska-Kozdrój

P 2_ A holistic method to integrate the potential of thermal groundwater use in spatial energy planning
Fabian Böttcher, Technische Universität München; Co-Autor(en): Kai Zosseder

P 3_ Contamination of fresh water resources by Hot Water- Control by active carbon in Geothermal Site
Yıldırım Tosun, Şırnak University

P 4_ Einfluss hydraulischer Randbedingungen auf den tiefen Grundwasserfluss im Oberrheingraben
Nora Koltzer, Helmholtz-Zentrum Potsdam Deutsches GeoForschungsZentrum - GFZ;
Co-Autor(en): Giulia Friedland, Mauro Cacace, Jessica Freymark, Judith Sippel, Magdalena Scheck-Wenderoth

P 5_ Erstellung von 3D-Strukturmodellen geothermisch nutzbarer Horizonte im Bereich Nordwestdeutschlands
Evelyn Suchi, Leibniz-Institut für Angewandte Geophysik

P 6_ Evolution of fracture permeability during effective pressure cycles
Harald Milsch, Deutsches GeoForschungsZentrum GFZ;
Co-Autor(en): Hannes Hofmann, Guido Blöcher

P 7_ Fault evolution and retrodeformation of the GRAME study area around Munich, Bavarian Molasse Basin
Jennifer Ziesch, Leibniz-Institut für Angewandte Geophysik;
Co-Autor(en): David C. Tanner, Hermann Buness, Rüdiger Thomas

P 8_ GeConnect – Thermal Response of Casings with Flexible Coupling Connections
Gunnar Skúlason Kaldal

P 9_ GeoParaMoL: Grundlagen für eine nachhaltige Reservoirerschließung mittels 3D Seismik im Raum München
Hermann Buness, LIAG; Co-Autor(en): Hartwig von Hartmann, Jennifer Ziesch, Britta Wawerzinek, Ernesto Rioseco, Rüdiger Thomas

P 10_ Geothermische Nutzung in Deutschland 2017 - 2018
Josef Weber, Leibniz-Institut für Angewandte Geophysik; Co-Autor(en): Holger Born

P 11_ **GeoWell - Innovative materials and designs for long-life high-temperature geothermal wells**

Árni Ragnarsson, ÍSOR - Iceland GeoSurvey

P 12_ **GeoWell: Monitoring of gravel packing and cement pumping with distributed fiber optic strain sensing**

Martin Lipus, GFZ Potsdam; Co-Autor(en): Thomas Reinsch, Cornelia Schmidt-Hattenberger, Jan Henninges, Matthias Reich

P 13_ **QEWS II: TRT-Prüfverfahren - Erste Testergebnisse einer künstlichen Erdwärmesonde**

Hanne Karrer, Bayerisches Zentrum für Angewandte Energieforschung e. V. (ZAE Bayern) Co-Autor(en): Markus Pröll; Gloria Streib; Peter Osgyan; Tanja Behnen; Immo Kötting

P 14_ **Reaktive Reservoirsysteme - Kristallkeimbildung und Filterprozesse in geothermischen Systemen**

Sascha Frank, Ruhr-Universität Bochum; Co-Autor(en): Philipp Zuber, Stefan Wohnlich, Jürgen Schreuer

P 15_ **Riffkörper-Modelle sowie Ablagerungsrekonstruktion auf Basis seismischer und lithologischer Fazies**

Julia Gallas; Co-Autor(en): Hartwig von Hartmann

P 16_ **Soil Stabilization and Cementing of Settling Land Fields Surrounding Geothermal Hot Wells**

Yıldırım Tosun, Şırnak University

P 17_ **The Possibilities of Hidden Geothermal Prospects in Indonesia**

Jatmiko Prio Atmojo, Pertamina Research and Technology Center; Co-Autor(en): Yunis

P 18_ **Versuchsaufbau zur Messung der hydraulischen Systemdichtheit von Erdwärmesonden**

Alexander Kirschbaum, Bayerisches Zentrum für Angewandte Energieforschung e. V. (ZAE Bayern); Co-Autor(en): Dr. Jens M. Kuckelkorn, Kilian Hagel, Lukas Pendzich

P 19_ **Weltweite Nutzung von Grubenwässern und deren unterschiedliche Auswirkungen auf den Anlagenbetrieb**

Thomas Grab, TU Bergakademie Freiberg; Co-Autor(en): Bastian Wenzke, Maria Ussath, Thomas Storch, Tobias Fieback

P 20_ **A semi-empirical Model describing the Cavitation Erosion Process of Granular Material**

Simon Hahn, International Geothermal Centre Bochum; Co-Autor(en): Mohammed Eldemerdash, Volker Wittig, Rolf Bracke

P 21_ **Der Absorptions-Kraft-Zyklus in der Geothermie**

Anno von Reth

P 22_ **Geothermal Potentials of Pakistan Country Update Report**

Malik Bakht, Geological Survey of Pakistan; Co-Autor(en): Nil

P 23_ **Neue GeotIS-Daten**

Thorsten Agemar, LIAG; Co-Autor(en): Alten, J.-A.; Kunkel, C.; Suchi, E., Weber, J.

P 24_ **New Concept for Cementing of Super Hot Geothermal Wells based on Polycondensation**

Simon Hahn, International Geothermal Centre Bochum; Co-Autor(en): Marvin Glißner, Maurice Lefebvre, Simon Hahn, Michal Kruszewski, Volker Wittig, Rolf Bracke

P 25_ **Schule 2020 – Lernen mit Energie Betriebserfahrung und -optimierung des Willibald-Gluck-Gymnasiums**

Christian Kley, Institut für Gebäude- und Solartechnik (IGS); Co-Autor(en): Franziska Bockelmann, M. Norbert Fisch

P 26_ **Technikumversuch zur Untersuchung der hydraulischen Systemdurchlässigkeit von EWS im Lockergestein**

Jan-Henrik Kupfernagel, Hochschule Ostwestfalen-Lippe; Co-Autor(en): J. C. Henze, B. Welsch, M. Schedel, I. Sass, L. Müller

Science Bar - Contest

28/11/2018 *// 16:00 - 17:40 // Wandelgang Süd*

1. **Masterarbeit: Heating the subsurface: Thermomechanical characterization of subsurface seasonal thermal energy storage in the Ruhr metropolitan area**
   Benedikt Ahrens, International Geothermal Centre, Co-Autor(en): Jan Paul Gilbert, Kristian Kroll, Mandy Duda
2. **Masterarbeit: Skalenübergreifende Charakterisierung von potentiellen Wasserwegsamkeiten im devonischen Massenkalk im Hönnetal und Norden Wuppertals**
   Martin Balcewicz, Internationales Geothermiezentrum Bochum;
   Co-Autor(en): Kevin Lippert, Mathias Nehler, Rolf Bracke
3. **Dissertation: Dynamic Analysis of Offshore Monopile with Heat Exchanger System for Energy Storage**
   Arundhuti Banerjee Indian, Institute of Technology (IIT), Delhi, Civil Engineering Department
4. **Masterarbeit Untersuchung der Auswirkungen thermischer Belastungszyklen auf die hydraulische Durchlässigkeit des Systems Erdwärmesonde, Hinterfüllbaustoff und Lockergestein**
   Sören Goldkuhle, Hochschule Ostwestfalen-Lippe,
   Co-Autor(en): Robin Loke, Jan-Henrik Kupfernagel, Lutz Müller
5. **Dissertation: Laboratory experiments on thermal retardation and local-thermal-non-equilibrium effects on heat transport in conditions of a highly conductive aquifer**
   Manuel Gossler, TU München, Co-Autor:Kai Zosseder
6. **Dissertation: Fault zones in pumping tests – parameter studies for the Upper Jurassic aquifer of the North Alpine Foreland Basin by utilization of numerical simulations**
   Florian Konrad, TU München, Co-Autor: Kai Zosseder
7. **Dissertation: Influence of Mechanical Material Properties of Cement And Rock Formations on Wellbore Cement Stresses in a Geothermal Well**
   Michal Kruszewski, Internationales Geothermiezentrum Bochum;
   Co-Autor: Volker Wittig
8. **Masterarbeit: Gekoppelte hydromechanische Thermo-Triaxialversuche an Sandsteinproben zur Bestimmung poroelastischer Parameter**
   Valerian Schuster, Technische Universität Darmstadt,
   Co-Autor(en): Sebastian Weinert, Kristian Bär, Ingo Sass
9. **Dissertation: Re-evaluation of the geothermal potential at Geretsried: Preliminary results of the new structural and facies interpretation of the 3D seismic data**
   Vladimir Shipilin, Leibniz Institute for Applied Geophysics;
   Co-Autor(en): Hartwig von Hartmann, David C. Tanner, Inga Moeck
10. **Masterarbeit: Adaptive Finite-Elemente-Verfahren für Erdwärmesondenspeicher**
    Philipp Steinbach, Technische Universität Darmstadt / Darmstädter Exzellenz-Graduiertenschule für Energiewissenschaft und Energietechnik
11. **Dissertation: Quantifizierung und Ausweisung petrothermaler Potenziale: Methodenentwicklung am Beispiel von Hessen 3D 2.0**
    Sebastian Weinert, Technische Universität Darmstadt, Institut für Angewandte Geowissenschaften / Darmstädter Exzellenz-Graduiertenschule für Energiewissenschaft und Energietechnik; Co-Autor(en): Meike Hintze, Kristian Bär, Ingo Sass
12. **Masterarbeit: Understanding bilinear flow in fractured reservoirs by numerical hydraulic modelling**
    Patricio Pérez Donoso, Leibniz Institute for Applied Geophysics;
    Co-Autoren: P., Meneses Rioseco, E., Ortiz Rojas, A.

Science Bar - Young Geothermal

28.11. - 29.11. *// 11:20 - 15:40 // Wandelgang Süd*
Chair: Bastian Welsch, TU Darmstadt

In the poster exhibition at the Science Bar, young scientists can present their scientific works to a broad audience. The award for the best oral presentation of a poster will take place on 29.11. at 9:30.

Evening Events

Icebreaker Evening

27/11/2018 *// 19:30 // Foyer*

At the end of the workshop day the »Icebreaker Evening« will take place. All congress participants are cordially invited to end the first day in a relaxed atmosphere and to make new contacts. Participation is free of charge, but registration is requested for better planning. The number of participants is limited.

The Icebreaker is supported by EnergieAgentur.NRW

Social Evening

28/11/2018 *// 19:30 // Mezzo Mezzo, Kettwiger Str. 36, 45127 Essen*

The social evening takes place in the restaurant Mezzo Mezzo. The restaurant is within walking distance of the Haus der Technik. Here the participants can exchange ideas in a relaxed atmosphere and enjoy the buffet together. Registration is required for participation. The ticket price for the social evening is 55 €.

Awards

Patricius Medal // at the opening ceremony on 28/11/2018
Junior prize // during the opening of the day on 29/11/2018
Science Bar // at the opening of the day on 29/11/2018

Sideevents

Excursion:
Geothermal uses of infrastructures and mine water in the coal mining industry

30.11.2018 *// 10:00 - 14:00*

The Ruhr area with its more than 180 former coal mines in the deeper underground has extensive cavity structures with an extension of several hundred square kilometres. These structures are partly flooded, partly the flooding process is imminent. At several sites in Bochum, Essen and Marl, the groundwater is already being actively used in former mine buildings for future energy generation and storage. The half-day excursion of the International Geothermal Centre exemplifies the possibility of integrating mining structures into the conversion of district heating systems in the Ruhr from fossil to renewable energy sources.

Responsible person & registration:

Dr. Meral Fero, GZB - INTERNATIONAL GEOTHERMAL CENTRE
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F +49 (0)234-3214890
meral.fero(at)geothermie-zentrum.de

Crossover Workshop EAGE // BVG

30/11/2018 *// 11:00 - 17:00*

On Friday, 30/11/20187, a joint workshop of the European Association of Geoscientists and Engineers (EAGE) and the German Geothermal Energy Association will take place after the Geothermiekongress at the International Geothermal Centre. All information and the registration form can be found on the EAGE website: www.eage.org

Workshop EAGE/BVG Workshop on Reservoir-Geomechanics

As the world looks increasingly to the potential of geothermal energy, there is a clear need to better understand the geomechanical setting and the issues involved in exploitation of this resource. This is the motivation behind our new event »First EAGE / BVG Workshop on Reservoir and Geomechanics«, which will be held in Bochum, Germany on 30 November 2018.

The geomechanics situation in a reservoir is defined by the status before any activity is performed (a priori status). This status is very hard to acquire either by direct measurements or by interpretation of indirect indicators as for instance, seismic events. During the fluid extraction from the reservoir or in case of geothermal usage (also fluid injection), the geomechanical status of the reservoir will be changed in a complex time dependent process. Those changes may as well be measured (monitored) or estimated by modelling. In any case they are dependent on the geological setting and details of the extraction.

As the geomechanical issues are of dominant interest for geothermal usage of a reservoir and for oil and gas exploitation it is very interesting to join scientific findings of both sides in this field and discuss about future possibilities. In this workshop, specialists in the field will talk about the use of all the tools (available and emerging) to optimize geothermal production

strategies. Join the First EAGE / BVG Workshop on Reservoir and Geomechanics to learn and discuss about Geomechanical issues within geothermal energy exploration!

Venue International Geothermal Centre · GZB, University of Applied Science Lennershofstr. 140 · 44801 Bochum

Speaker

Welcome, introduction
Kaja Westdijk, EAGE, Horst Rüter; HarbourDom

Are there lessons learned from oil and gas reservoir geomechanics for geothermal applications
Jörg Herwanger, Multi-Phase Geomechanics

Introduction to reservoir mechanics, the stress field
Tobias Backers, geomecon GmbH

Measuring stress field components
Gerd Klee, SolExperts GmbH

Prediction of pore pressure, a central parameter for drilling and geomechanical reservoir characterisation
Michael Drews (tbc), Friedrich-Alexander-Universität Erlangen

Stress, fractures and fluid flow, fracture reactivation, generation of induced events
Tobias Meier, geomecon GmbH

Geomechanical modelling and wellbore stability in highly deviated boreholes
Jens Nuechter, DEA

Locating and interpreting microseismic events using elastic waveforms: Application to Induced Seismicity at the Groningen Field
Chris Willacy, Ewoud van Dedem, Jan-Willem Blokland, Sara Minisini and Peter van den Bogert, Shell

Fracture based reservoir characterization on 3D seismic data for the oil & gas exploration
Fabian Althans, DMT Petrologic

Passive seismic methods for geothermal applications
Katrin Löer, Nima Riahi, Erik H. Saenger, International Geothermal Centre GZB

Comittees

Scientific Committee: Horst Rüter (Vorsitz), BVG Katharina Aubele, GAB; Rolf Bracke, GZB; Reinhard Kirsch, BVG; Thomas Kölbel, EnBW; Thomas Kohl, KIT; Harald Milsch, GFZ Potsdam; Inga Moeck, LIAG; Ingo Sass, TU Darmstadt; Rüdiger Schulz, BVG
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Leonhard Thien, EnergieAgentur.NRW; Christoph Wieland, TU München
Kai Zosseder, TU München

Organising Committee: Erwin Knapek (Vorsitz), BVG
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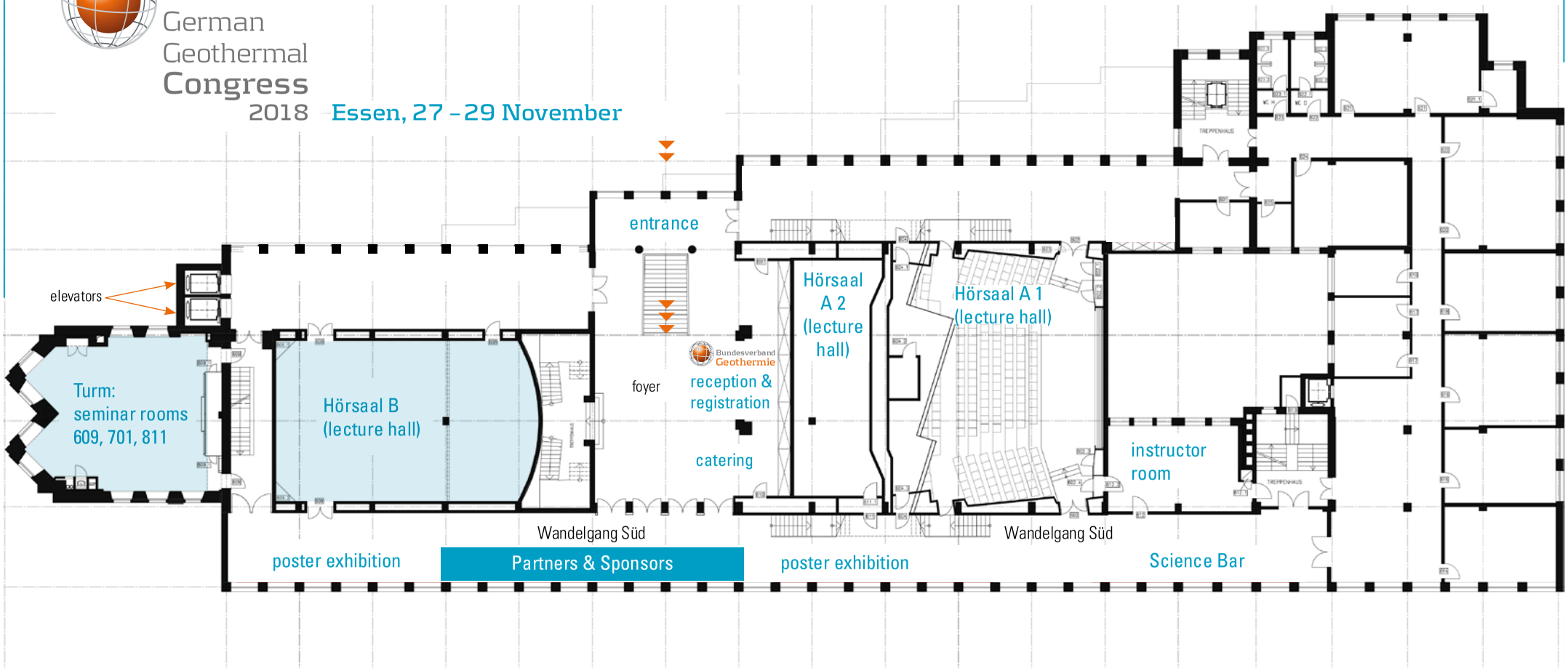
Claus Heske, BVG; Inga Moeck, LIAG; Mathias Nehler, GZB
Rüdiger Schulz; BVG, Horst Rüter, BVG
Leonhard Thien, EnergieAgentur.NRW; Çiğdem Tolali, BVG
Bastian Welsch, TU Darmstadt

floor plan: Haus der Technik

German Geothermal Congress 2018

Essen, 27 – 29 November



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